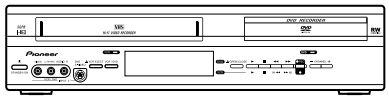
Pioneer sound.vision.soul

Service Manual



DVR-RT500-S

ORDER NO.
RRV3033

DVD RECORDER

DVR-RT500-S
DVR-RT300-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Remarks
DVR-RT500-S	UXTLCA	AC120V	1	
DVR-RT300-S	UXTLCA	AC120V	1	

For details, refer to "Important Check Points for good servicing" .

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

T-ZZV SEPT. 2004 printed in Japan

SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

NOTICE

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

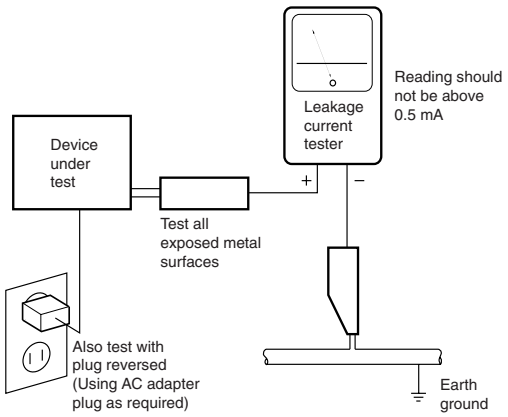
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

IMPORTANT

THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS

MAXIMUM OUTPUT POWER : 50 mW
WAVELENGTH : 654 - 662 nm

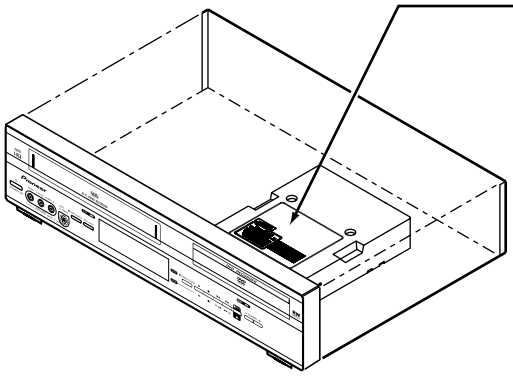
LASER DIODE CHARACTERISTICS

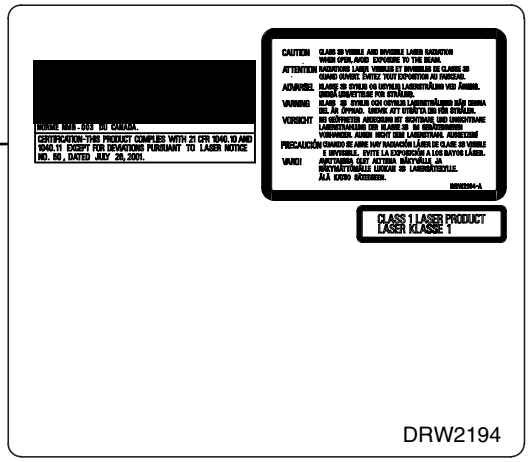
MAXIMUM OUTPUT POWER : 100 mW
WAVELENGTH : 780 - 787 nm

WARNING!

DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

■ LABEL CHECK





Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the test mode.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SPECIFICATIONS

G-1	**Outline of the product**				DVD-R/-RW Video Recorder & VHS Player/Recorder
G-2	**DVD System**	Color System			NTSC
		Disc Format	Rec		DVD-R/-RW
			Play		DVD-R/-RW, DVD-Video, CD-DA, CD-R/-RW
		Disc Diameter			120 mm, 80 mm
		Deck	Disc Loading System Motor		Front Disc Loading 3 Motors
		Pick up			1-Lens 2-Beams System
		Rec Time (Approx.) at 4.7 GB Disc	XP SP LP SLP		1 hour at 10 Mbps 2 hour at 5 Mbps 4 hour at 2.5 Mbps 6 hour at 1.6 Mbps
		Playback time (Max)	DVD 1-Layer DVD 2-Layer CD VIDEO CD		135 min (4.7 GB) 245 min (8.5 GB) 74 min – –
		Search speed		Actual	Fwd 4 step 2-45 times (DVD) 4-40 times (CD)
				Actual	Rev 4 step 2-45 times (DVD) 4-40 times (CD)
		Slow speed		Actual	Fwd 1/8-1/2 times – –
				Actual	Rev – – – –
G-3	**VCR System**	System			VHS Player / Recorder
		Video System			NTSC
		Hi-Fi STEREO			Yes
		NTSC PB (PAL 60Hz)			No
		Deck	DECK Loading System Motor		OVD-7 Front 3
		Heads	Video Head		4 Head
			FM Audio Head		2 Head
			Audio / Control		Mono / Yes
			Erase (Full Track Erase)		Yes
		Tape Speed	Rec	PAL NTSC	– SP/SLP
			Play	PAL NTSC	– SP/LP/SLP
		Fast Forward / Rewind Time (Approx.) at 25°C with Cassette			FF : 1'48" / REW : 1'48" T-120
		Forward / Reverse Picture Search	NTSC or PAL-M PAL or SECAM		SP/LP/SLP = 3x, 5x / 7x, 9x / 9x, 15x –
		Frame Advance			Yes
		Slow Speed			1/10

6.3 SERVICE MODE LIST

To enter one of the Sub-Service modes, hold a designated key on the unit pressed for a specified period of time while holding another designated key on the unit or on the remote control unit pressed.

Mode of the Unit	Key on the Unit	Key on the Unit	Specified Period (sec)	Description
VCR	FF	CH+	2	For (1) initial setting of the μ-CON on the VCR side, (2) confirmation of initial settings for the Memory IC, and (3) displaying the accumulated time of playback and recording on the screen.
VCR	PLAY	CH+	2	Initialization to the state at shipment **Note:** Do NOT use this mode during normal servicing. This mode will reset the time setting, channel setting, and the accumulated time of playback/recording.
VCR (Playback)	CH+	CH–	2	For setting tracking to the center value **Note:** You can enter this mode by holding the ATR key on the remote control unit pressed for 2 seconds.
VCR (Playback)	REC/OTR	DVD/VCR	2	For automatic adjustment of the PG shifter
VCR	CH+	REC/OTR	2	For entering Service mode Entering this mode disables the EOT/BOT/reel sensor and enables the VCR section of the unit to operate even if a tape is not loaded.
VCR	STOP	CH+	2	For entering DVD-Audio-Level/Separation Adjustment mode
DVD	CH–	DVD/VCR	2	For displaying information
VCR	CH–	S-BY/ON	2	For entering Operation-of-Only-VCR-Section mode **Note:** In this mode, you cannot switch to DVD mode even if connection of the DVD section has been made.

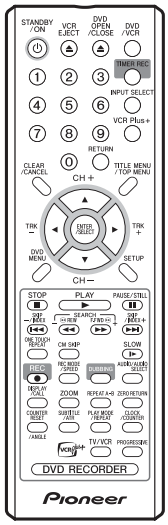
The following Sub-Service modes can be entered by first holding the designated key on the remote control unit pressed then pressing another designated key on the unit.

Mode of the Unit	Key on the Remote Control Unit	Key on the Unit	Specified Period (sec)	Description
DVD	0	STOP	2	For setting and unlocking the TRAY Lock. This mode functions cyclically.
DVD (NO DISC)	2	STOP	2	F/W Writing mode
DVD	6	STOP	2	For initial setting of μ-CON on the DVD side
DVD (NO DISC)	7	STOP	2	For canceling Parental Lock **Note:** This mode functions only when a disc is not loaded in DVD mode
DVD (NO DISC)	8	STOP	2	For entering Region-Code Writing mode
DVD (Playback, NO DISC)	9	STOP	2	For displaying Loader Information and error rates

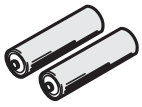
For switching the RF output channels (CH 3/4)
While the unit is off, hold the 3 or 4 key on the remote control unit pressed for at least 3 seconds.

● Accessories

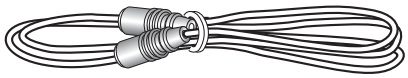
• Transmitter ×1
(076R0JZ010)



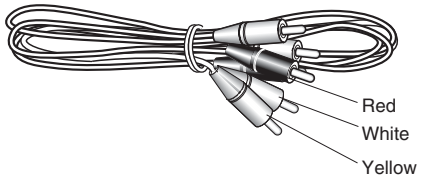
• Dry cell batteries ×2
(AAA/R03)



• RF antenna cable ×1
(06CPL02006)



• RCA Pin cable(L=1.2m) ×1
(red/white/yellow)
(06CPBA2003)

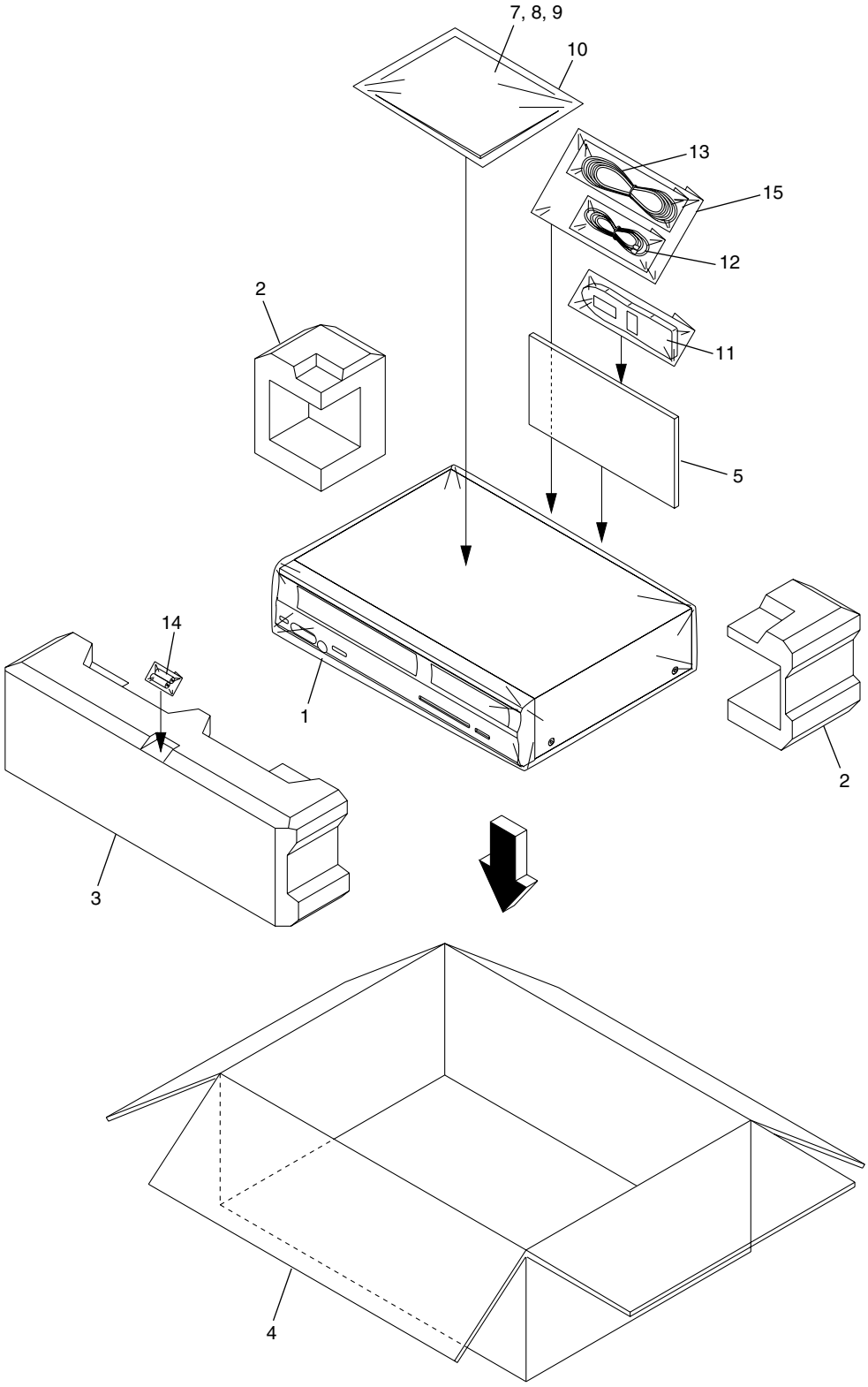


• Warranty Card
• Operating Instructions

2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING



PACKING parts List

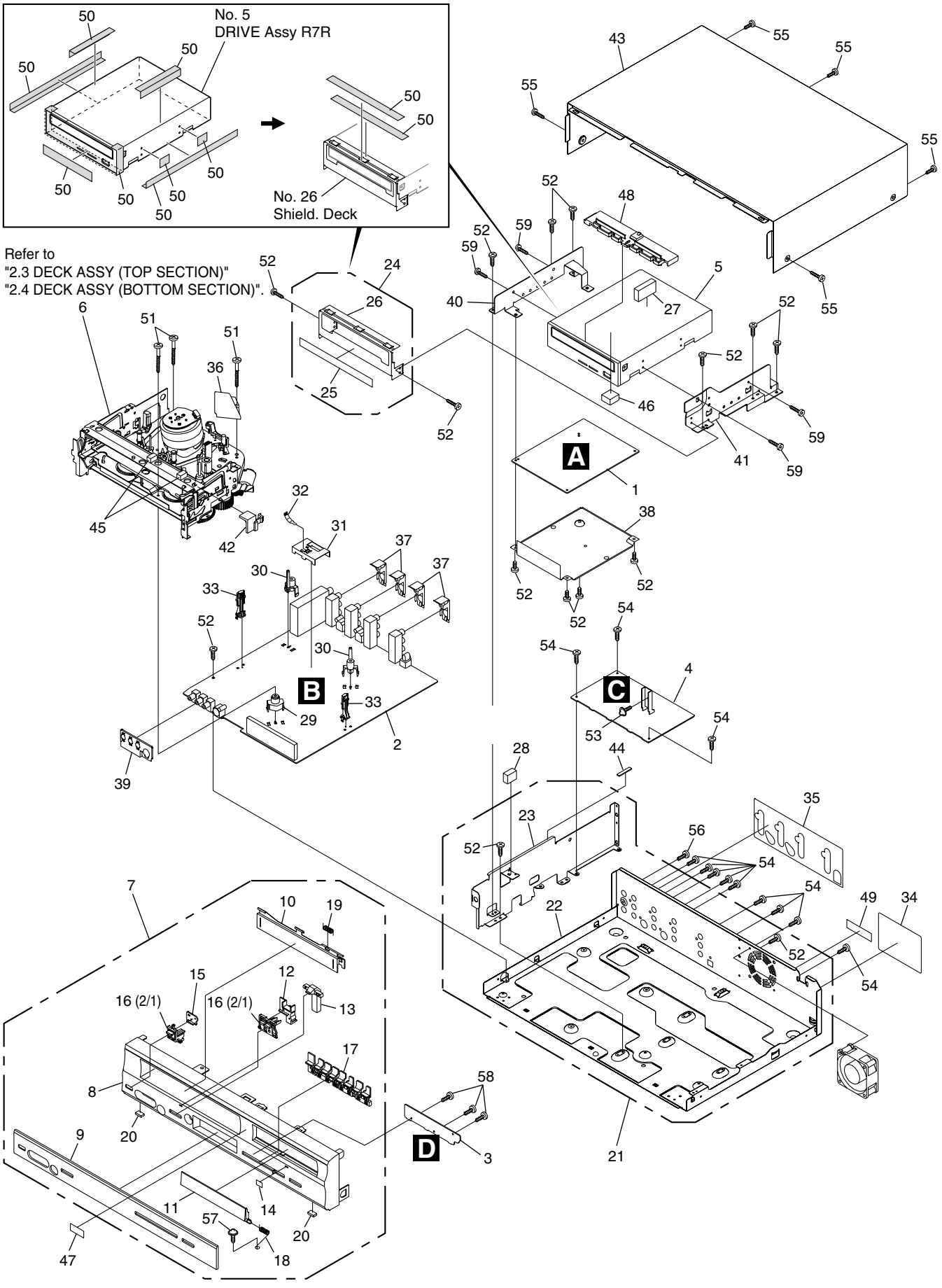
Mark	No.	Description	Part No.
	1	Gift Sheet	791WHA0100
	2	Package,Back	792WHA0519
	3	Package,Front	792WHA0574
	4	Gift Box	See Contrast table (2)
	5	Pad,DVD/VR (155 x 250)	795WCA0662
	6	•••••••	
	7	Instruction Book (English)	J2D30901A
	8	Guarantee Card	J2D30902A
	9	Warning Sheet	J2D30928A
	10	Polyethylene bag,Instruction	JB5UD200
	11	Transmitter (VXX2949)	076R0JZ010
	12	RF Antenna Cable	06CPL02006
	13	RCA Pin Cable	06CPBA2003
NSP	14	Battery Man Gan	1412004013
NSP	15	Polyethylene Bag	Y817041000

(2) CONTRAST TABLE

DVR-RT500-S/UXTLCA and DVR-RT300-S/UXTLCA are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-RT500-S /UXTLCA	DVR-RT300-S /UXTLCA
	4	Gift Box	793WCD1572	793WCD1587

2.2 EXTERIOR SECTION



EXTERIOR SECTION parts List

Mark	No.	Description	Part No.
	1	DVD/HD MPEG PCB Assy	See Contrast table (2)
	2	VCR MT PCB Assy	A2D309A010
	3	OPERATION PCB Assy	A2D309A270
	4	POWER PCB Assy	A2D309A240
	5	DRIVE Assy R7R (for Service)	VXX2976
	6	DECK Assy	A2D309A420A
	7	Front Cabi Assy	See Contrast table (2)
	8	Cabinet, Front	See Contrast table (2)
NSP	9	Plate, Display	See Contrast table (2)
	10	Flap, VCR	712WPJ0877
	11	Flap, DVD	712WPQ0008
	12	Cover, LED	713WPA0332
	13	Glass, LED	713WPA0333
	14	Sheet, LED	7230007689
	15	Stopper, Button	738WPA0105
	16	Button, Frame1	738WPB0040
	17	Button, Frame2	738WPB0041
	18	Spring, DVD-Flap	742WKA0001
	19	Spring, Flap	743WKA0042
	20	Cushion, Leg	800WFA0045
	21	Bottom Cabi Assy	7G7610007A
	22	Plate, Bottom	702WSA0227
	23	Angle, Center	761WSA0175
	24	Shield, Deck Assy	7G7610005D
	25	Sheet (149.4 x 14 x T14)	7230007819
	26	Shield, Deck	752WSA0437
	27	Cushion 65TS10.5-20 (40 x 15 x 6)	8965TS2040
	28	Cushion 65TS10.5-20 (20 x 15 x 12)	8965TS2020
	29	Holder, Deck	701WPA0686
	30	Holder, Deck	701WPA0751
	31	Shield, Case Head Amp	752WSA0230
	32	Spring, Earth Head Amp	753WUAA006
	33	Holder, End Sensor	85OP700038
	34	Sheet, Rating	See Contrast table (2)
	35	Sheet, Jack	See Contrast table (2)
	36	Cover, AC Head	752WSA0275
	37	Shield, COMPO	752WSA0290
	38	Shield, MPEG	752WSA0391
	39	Shield, Jack	752WUA0008
	40	Angle, DVD (L)	761WSA0150
	41	Angle, DVD (R)	761WSA0151
	42	Holder, Top	701WPA0781
	43	Cabinet, Top	702WSB0092
	44	Cushion (20 x 5 x T1)	800WFA0055
	45	Cushion 65TS10-10 (17.5 x 20 x 14)	8965TS1017
	46	Cushion 65TS10-5 (15 x 20 x 16)	8965TS1015
	47	POP Label	7230007860
	48	Holder, DVD	713WPA0337
	49	Sheet, Serial	7220001196
NSP	50	Tape	ZTA-570F-190BK
	51	Screw	8109130B9U
	52	Screw	810923070U
	53	Screw	8109I30A0U
	54	Screw	810923080U
	55	Screw	8109K3060U
	56	Screw	810723040U
	57	Screw	8110E2680U
	58	Screw	811022680U
	59	Screw	810223060U

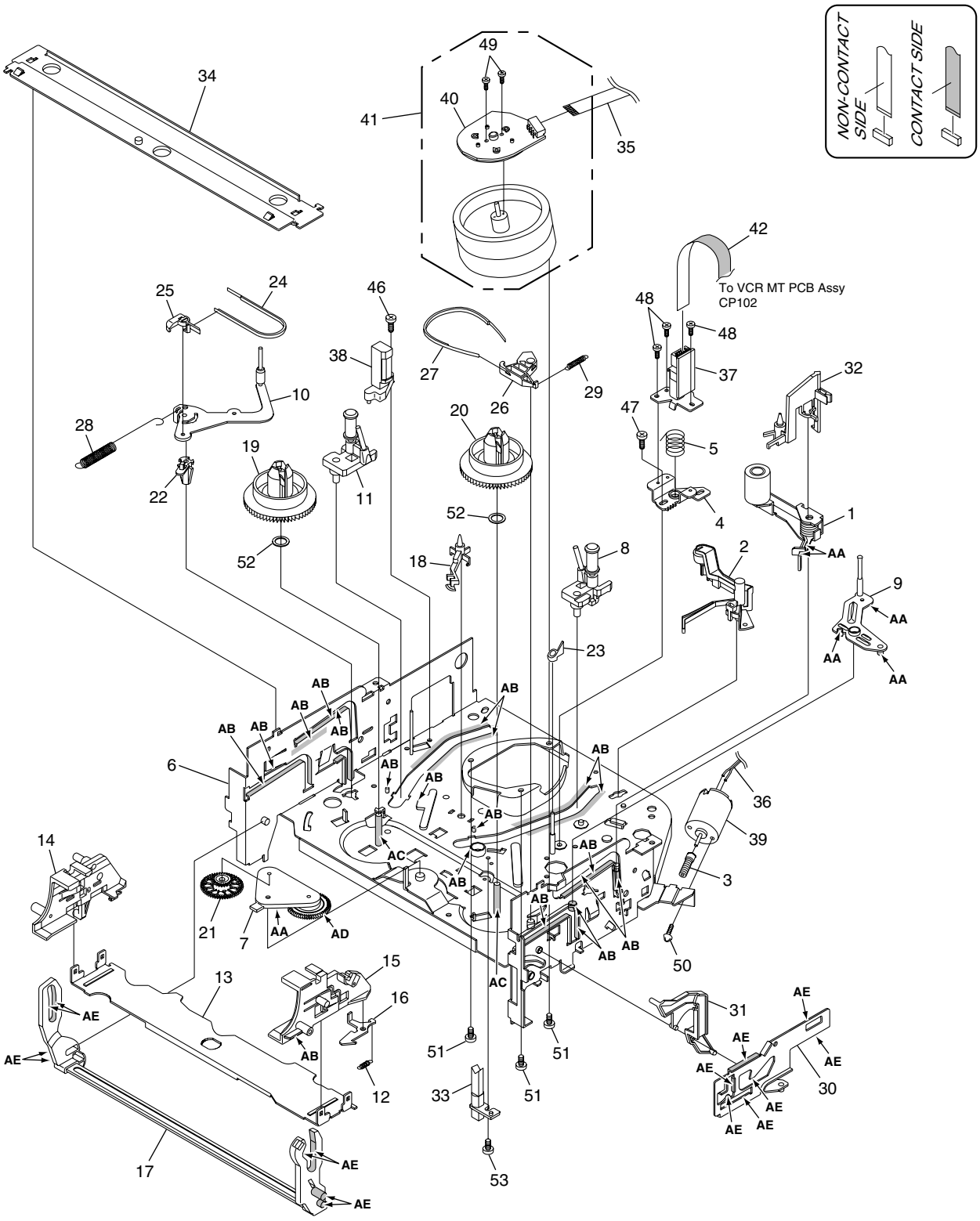
(2) CONTRAST TABLE

DVR-RT500-S/UXTLCA and DVR-RT300-S/UXTLCA are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-RT500-S /UXTLCA	DVR-RT300-S /UXTLCA
	1	DVD/HD MPEG PCB Assy	A2D309AB10*	A2D311AB10*
	7	Front Cabi Assy	7A7010037C	7A7010040C
	8	Cabinet, Front	701WPJ1285	701WPJ1308
NSP	9	Plate, Display	711WPD0662	711WPD0663
	34	Sheet, Rating	7226310001	7226310002
	35	Sheet , Jack	7230007843	7230007844

* The DVD/HD MPEG PCB Assy diffrence is only EEPROM (IC4002) setting data. Refer to P.92.

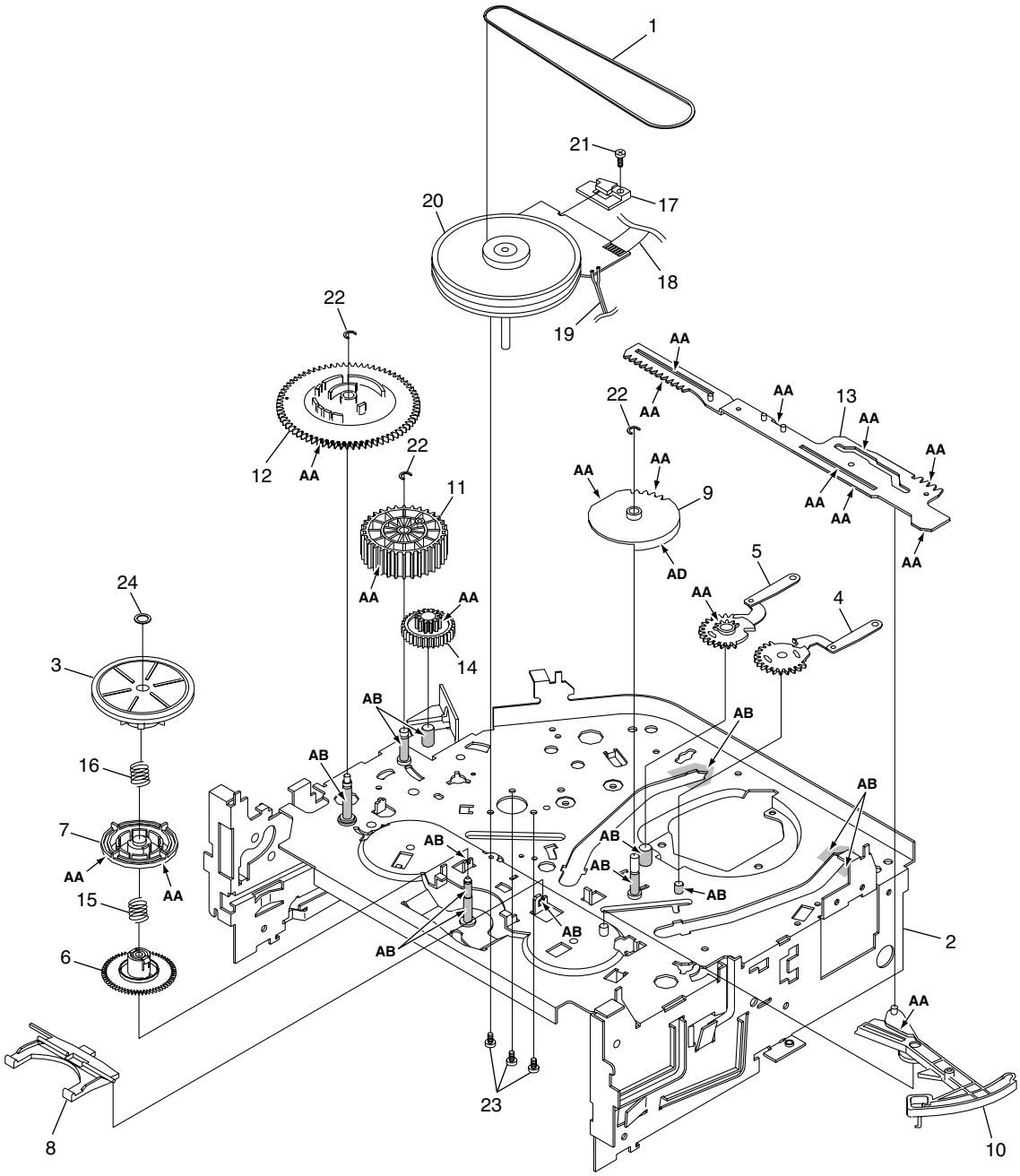
2.3 DECK ASSY (TOP SECTION)



DECK ASSY (TOP SECTION) parts List

Mark	No.	Description	Part No.
	1	Pinch Roller Block (VA)	85OA400240
	2	AHC Assy	85OA500026
	3	Worm	85OP600581
	4	Base, AC Head	85OP500083
	5	Spring, AC Head	85OP800324
	6	Main Chassis Assy	85OA000516
	7	Arm Idler Assy	85OA200090
	8	Inclined Base T Unit 3S	85OA400223
	9	P5 Arm Assy 2	85OA400232
	10	Tension Arm Assy 2	85OA400235
	11	Inclined Base S Unit	85OA400231
	12	Spring, Locker	85OP800367
	13	Cass, Holder	85OP900736
	14	Cass, Side L	85OP900748
	15	Cass, Side R	85OP900749
	16	Locker, R	85OP900739
	17	Link Unit	85OA900228
	18	Post, Cass Guide	85OP000496
	19	Reel, S (S)	85OP200316
	20	Reel, T (S)	85OP200317
	21	Gear, Idler	85OP200308
	22	Holder, Tension	85OP400492
	23	Cap. P4	85OP400520
	24	Band, Tension	85OP400542
	25	Connect, Tension	85OP400533
	26	Arm, Brake T	85OP600573
	27	Band, Brake T	85OP600584
	28	Spring, Tension	85OP800322
	29	Spring, Brake T	85OP800360
	30	Lever, Link	85OP900743
	31	Lever, Flap	85OP900744
	32	Cass, Opener	85OP900745
	33	Reflector, LED	85OP700035
	34	Bracket, Top 3V	85OP900746
	35	Cord Jumper (CD1501)	122H071704
	36	Cord Jumper (CD1502)	122Y021902
	37	Head (Audio Control)(H5001)	1523Q91003
	38	Head (Full Erase)(H5002)	1543Q02014
⚠	39	Motor, Loading (M101)	1596S98002
	40	Micro Motor (M2003)	1589S11020
⚠	41	Cylinder Unit Assy (UN4001)	A5L1046500
	42	Cord Jumper (CD102)	?????
	43	•••••	
	44	•••••	
	45	•••••	
	46	Screw	8107226804
	47	Screw	8107226404
	48	Screw	8102120604
	49	Screw	8109126604
	50	Screw/Washer (A)	810A130404
	51	Screw/Washer (A)	810A126504
	52	Polyslider Washer	82Q264713N
	53	Screw	8107226604

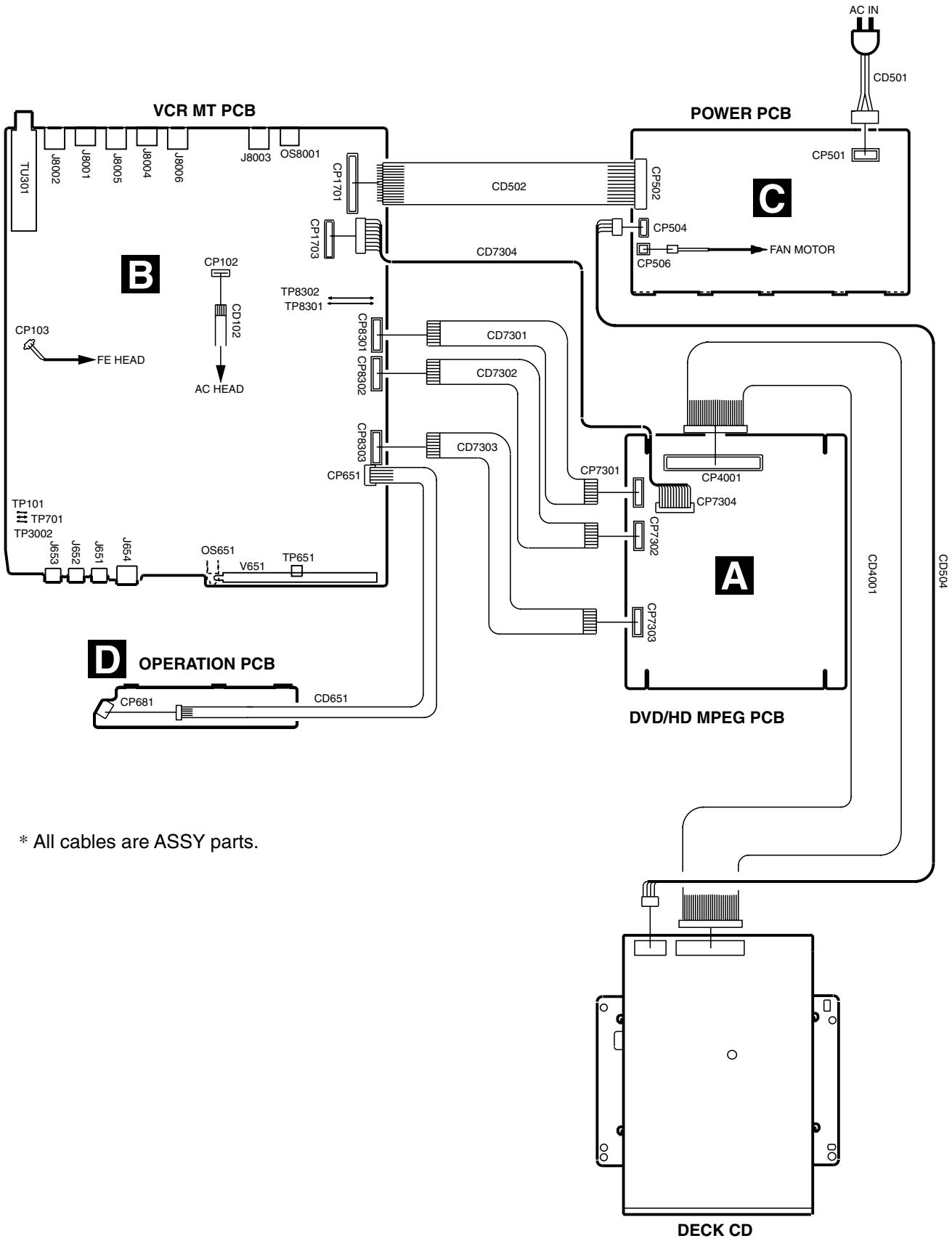
2.4 DECK ASSY (BOTTOM SECTION)



DECK ASSY (BOTTOM SECTION) parts List

Mark	No.	Description	Part No.
	1	Belt, Capstan (S)	85OP200290
	2	Main Chassis Assy	85OA000516
	3	Clutch Assy	85OA200089
	4	Loading Arm S Unit	85OA300065
	5	Loading Arm T Unit	85OA300066
	6	Gear, Clutch	85OP200311
	7	Gear, Coupling	85OP200312
	8	Lever, Clutch	85OP200313
	9	Gear, Main Loading	85OP300194
	10	Lever, Tension	85OP400490
	11	Cam, Pinch Roller	85OP600577
	12	Cam, Main	85OP600578
	13	Rod, Main	85OP600579
	14	Gear, Joint	85OP600582
	15	Spring, Coupling	85OP800355
	16	Spring, Ring	85OP800356
	17	Holder, Capstan	85OP400549
	18	Cord Jumper (CD1501)	122H071704
	19	Cord Jumper (CD1502)	122Y021902
⚠	20	Capstan DD Unit (M2001)	1510S98042
	21	Screw	8107226804
	22	E-Ring	83ETW30000
	23	Screw	8109126604
	24	Polyslider Washer	82P184505N

2.5 WIRING CABLE



* All cables are ASSY parts.

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C

D

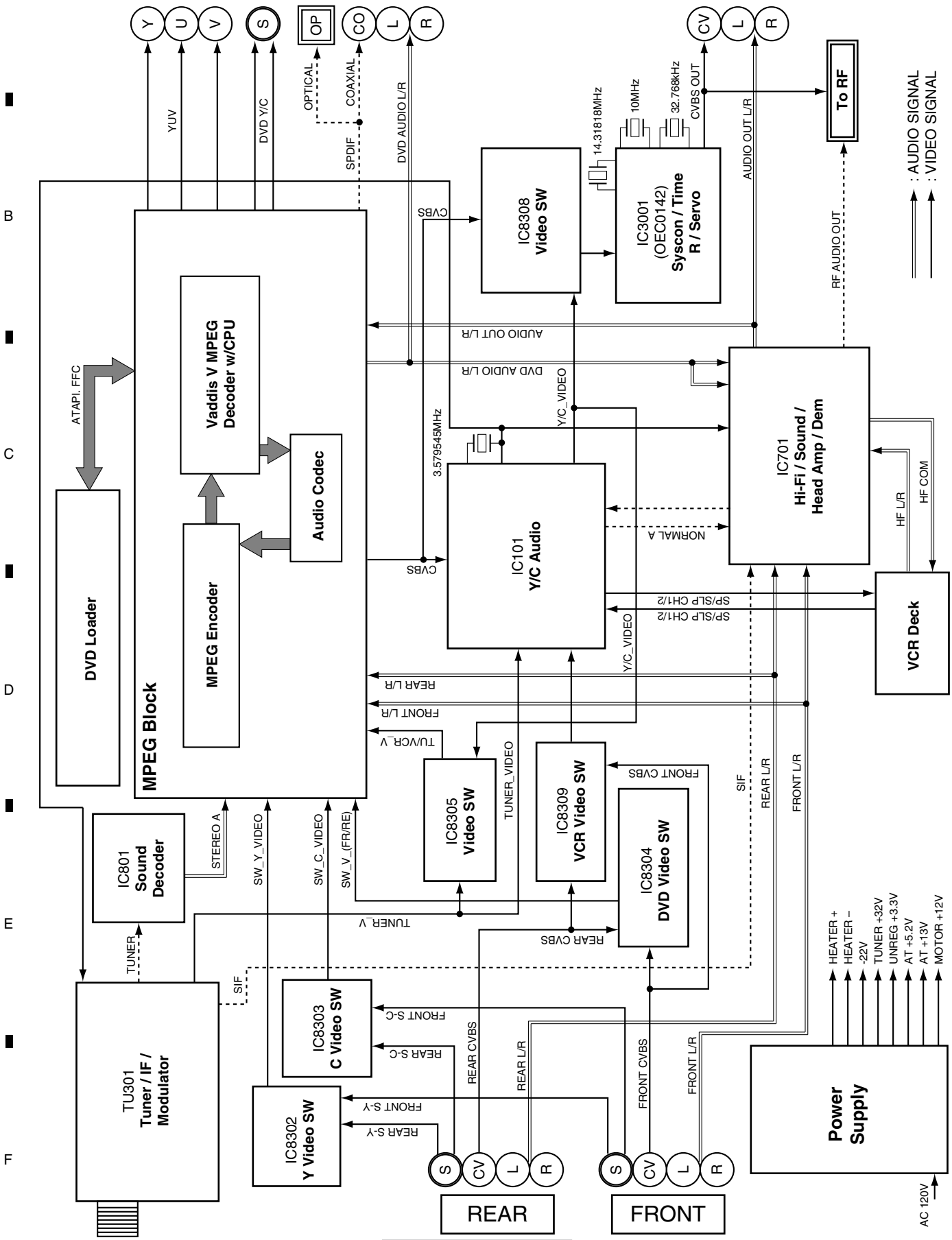
E

F

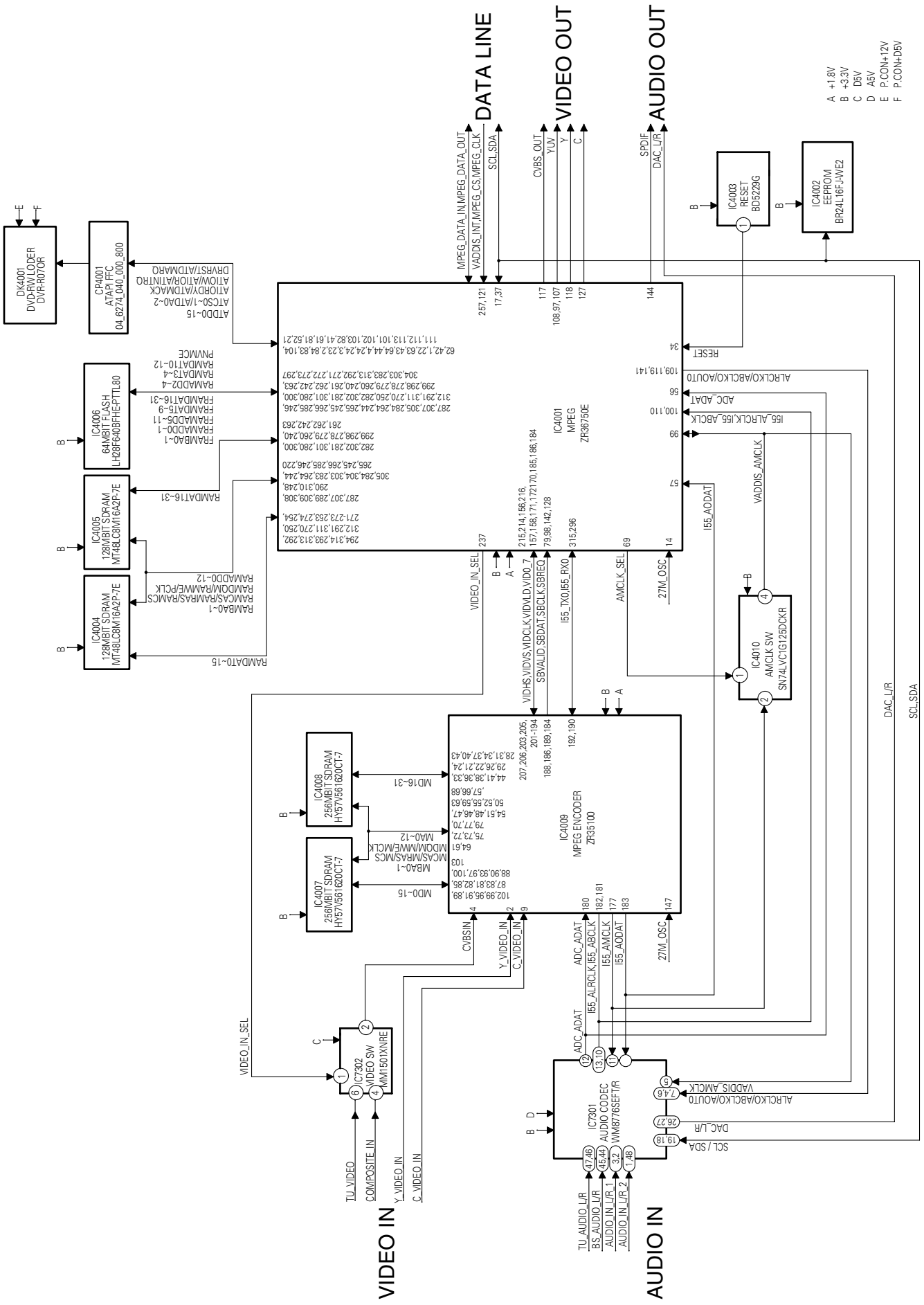
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

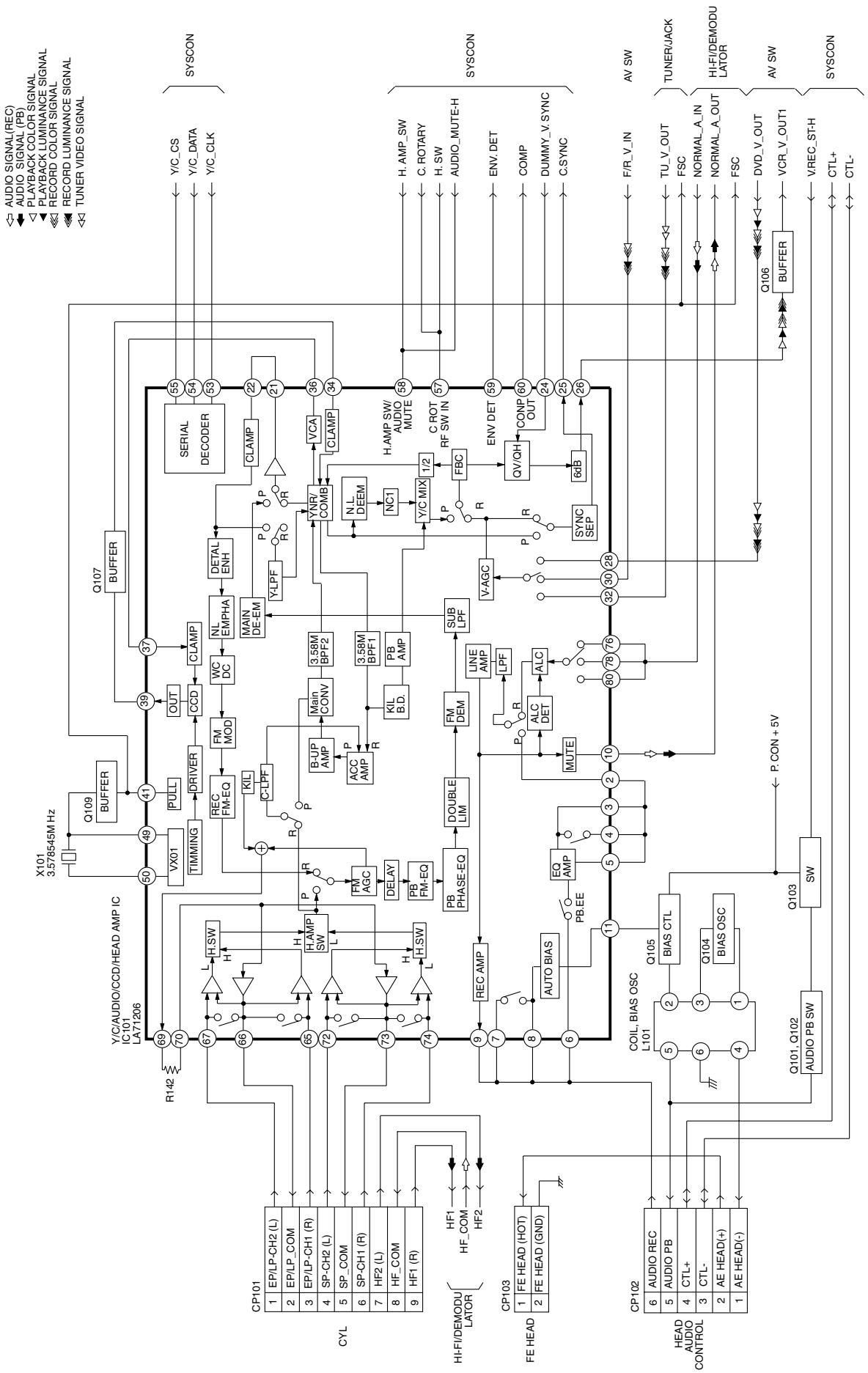
3.1.1 OVERALL BLOCK DIAGRAM



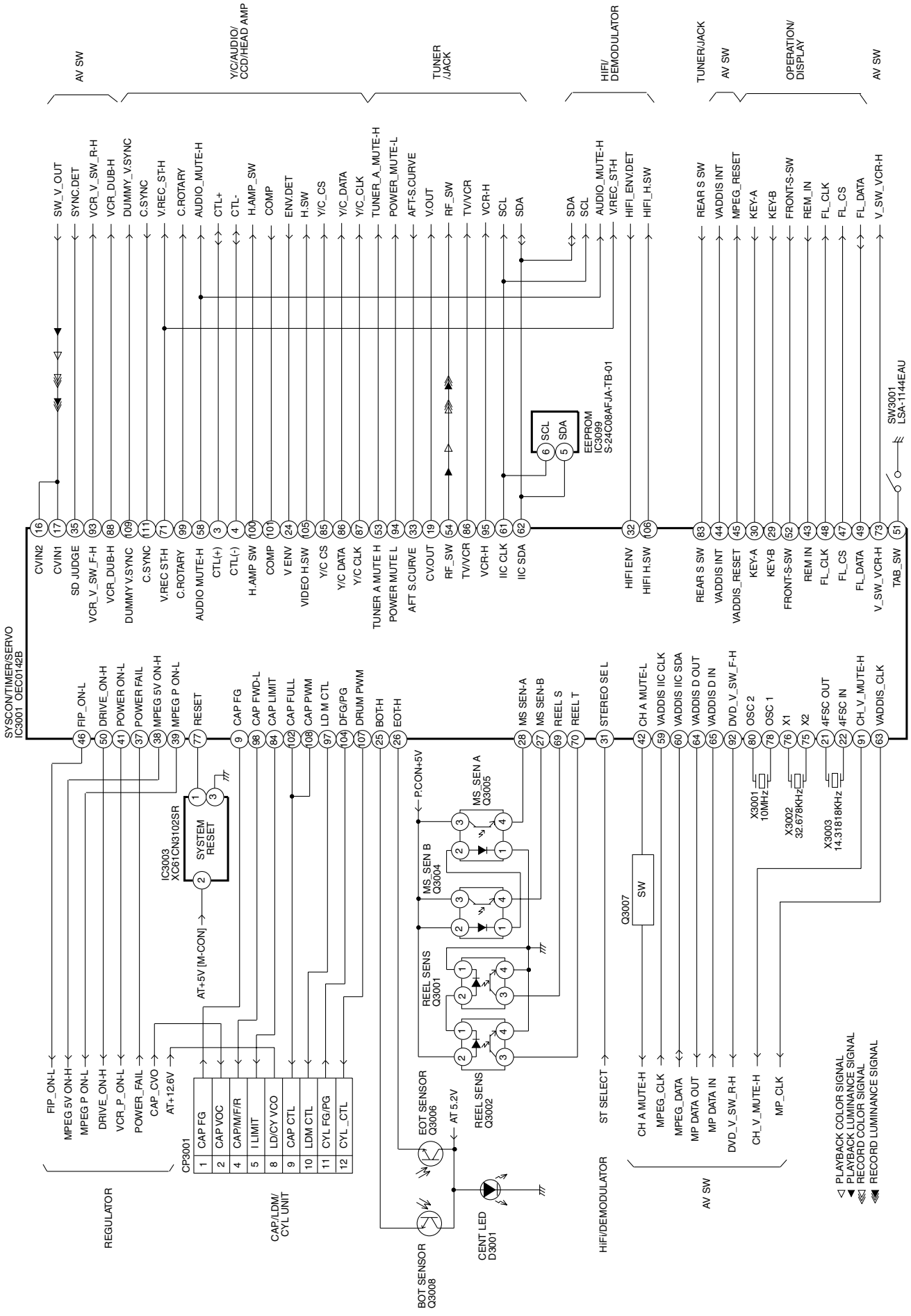
3.1.2 MPEG BLOCK BLOCK DIAGRAM



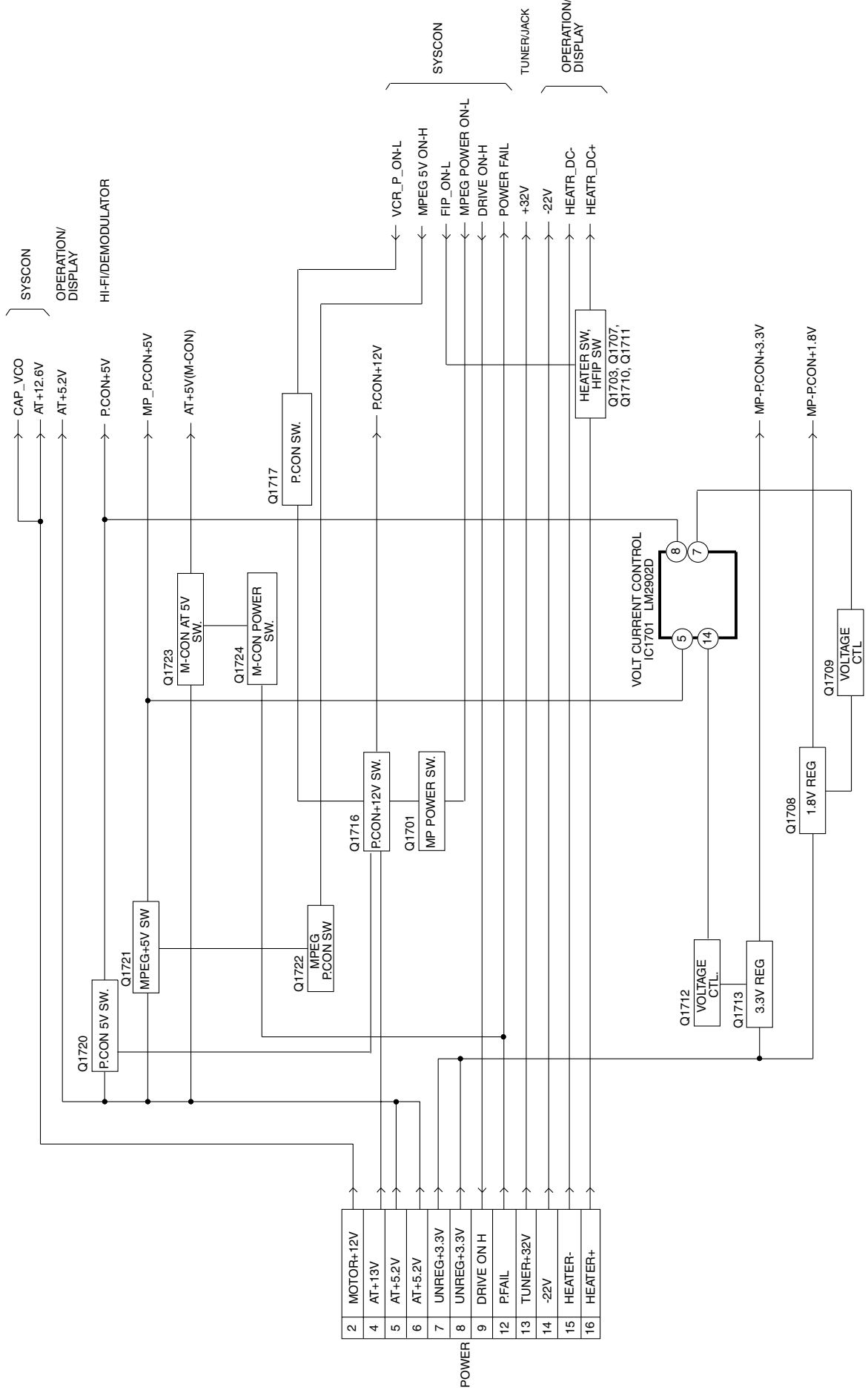
3.1.3 Y/C AUDIO / CCD / HEAD AMP BLOCK DIAGRAM



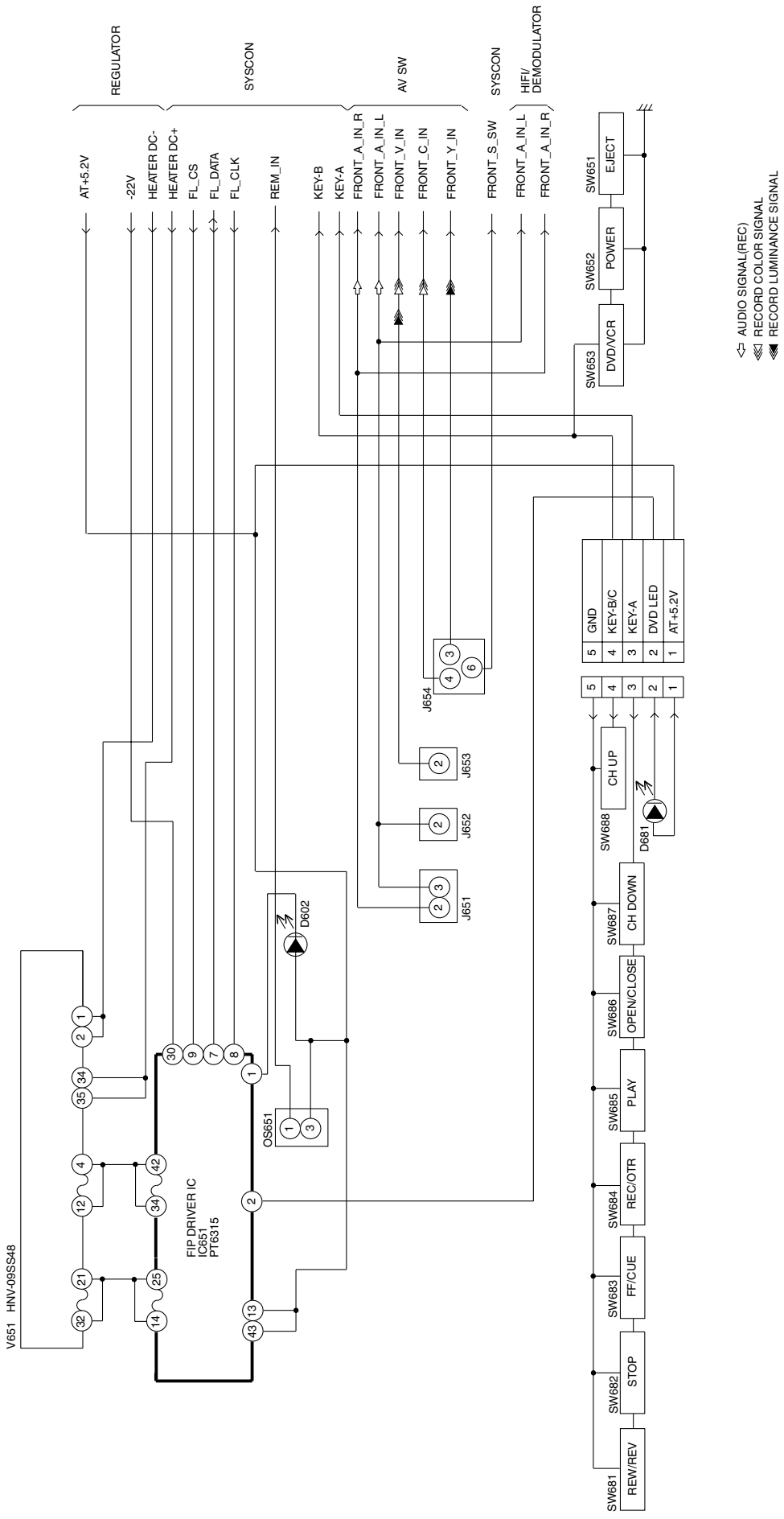
3.1.4 SYSTEM CONTROL BLOCK DIAGRAM



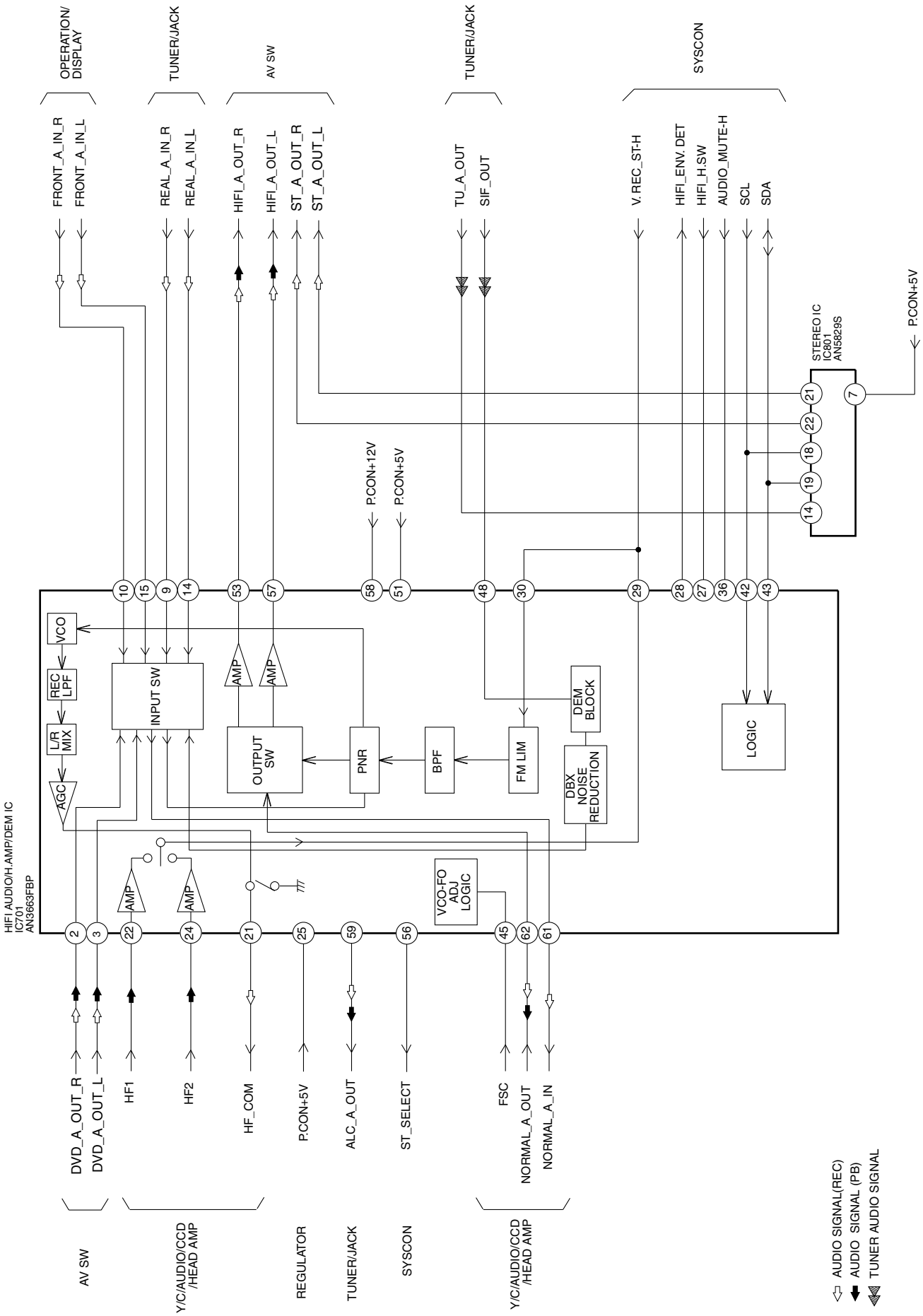
3.1.5 REGULATOR BLOCK DIAGRAM



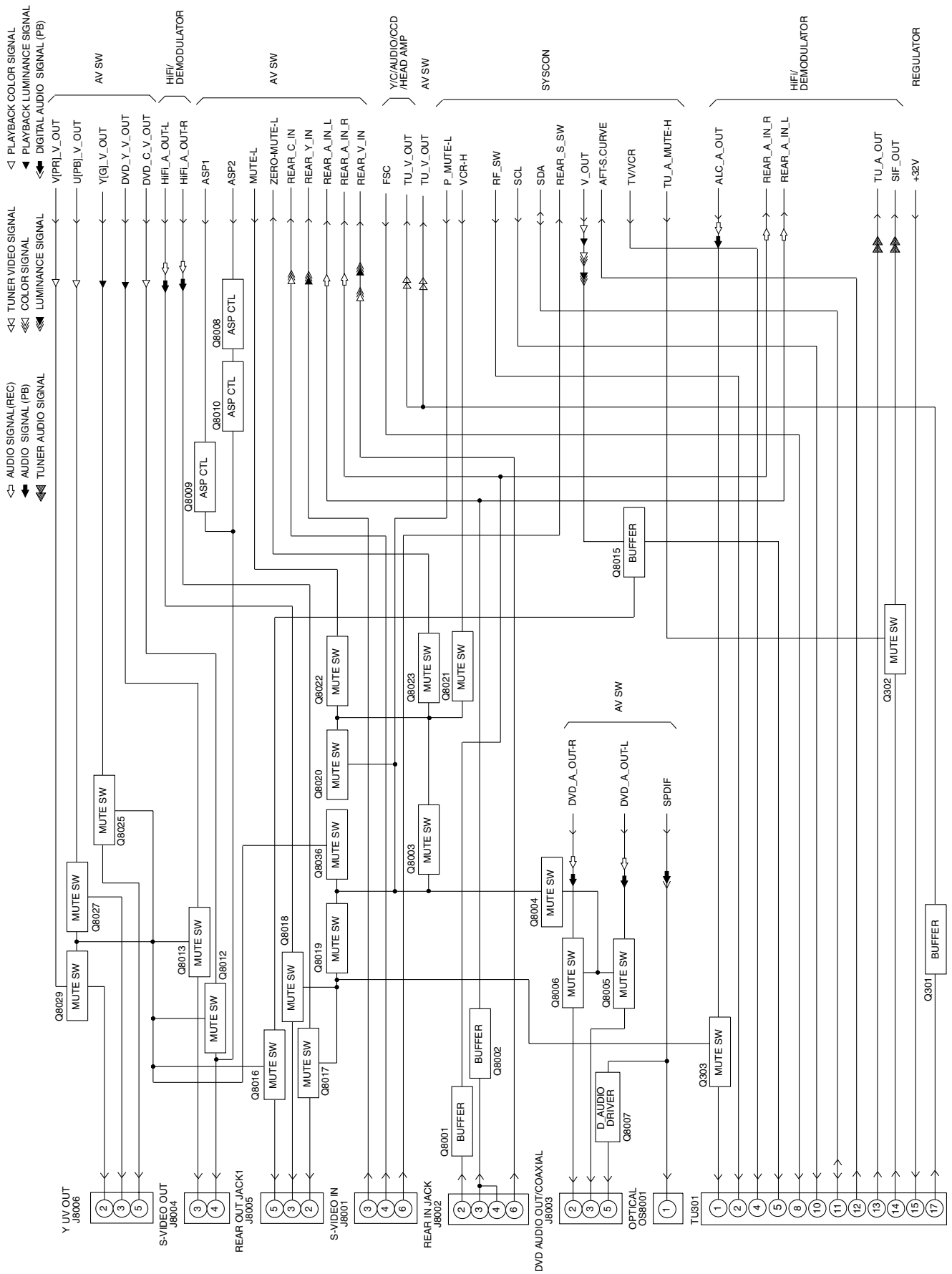
3.1.6 OPERATION / DISPLAY BLOCK DIAGRAM



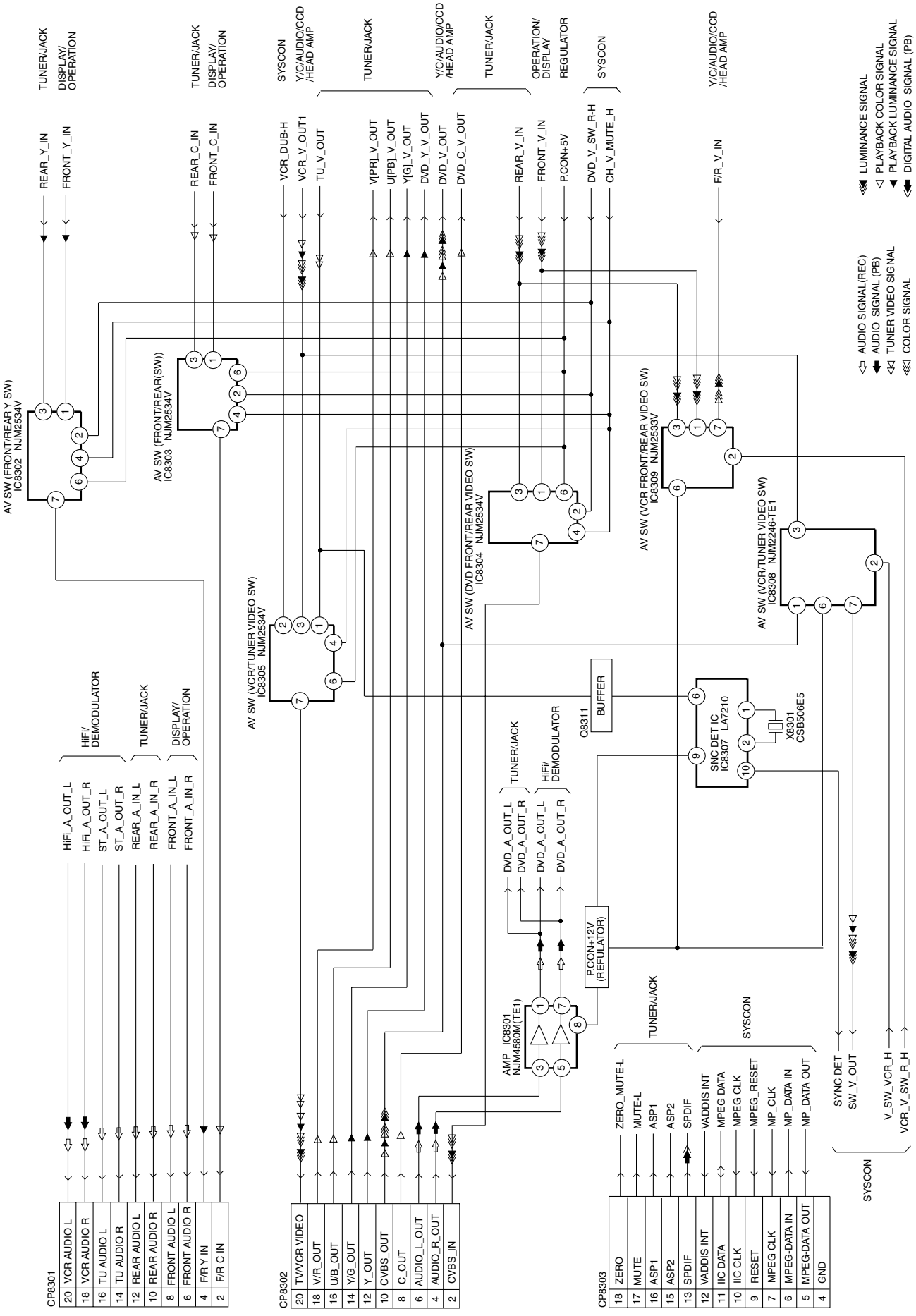
3.1.7 HiFi / DEMODULATOR BLOCK DIAGRAM



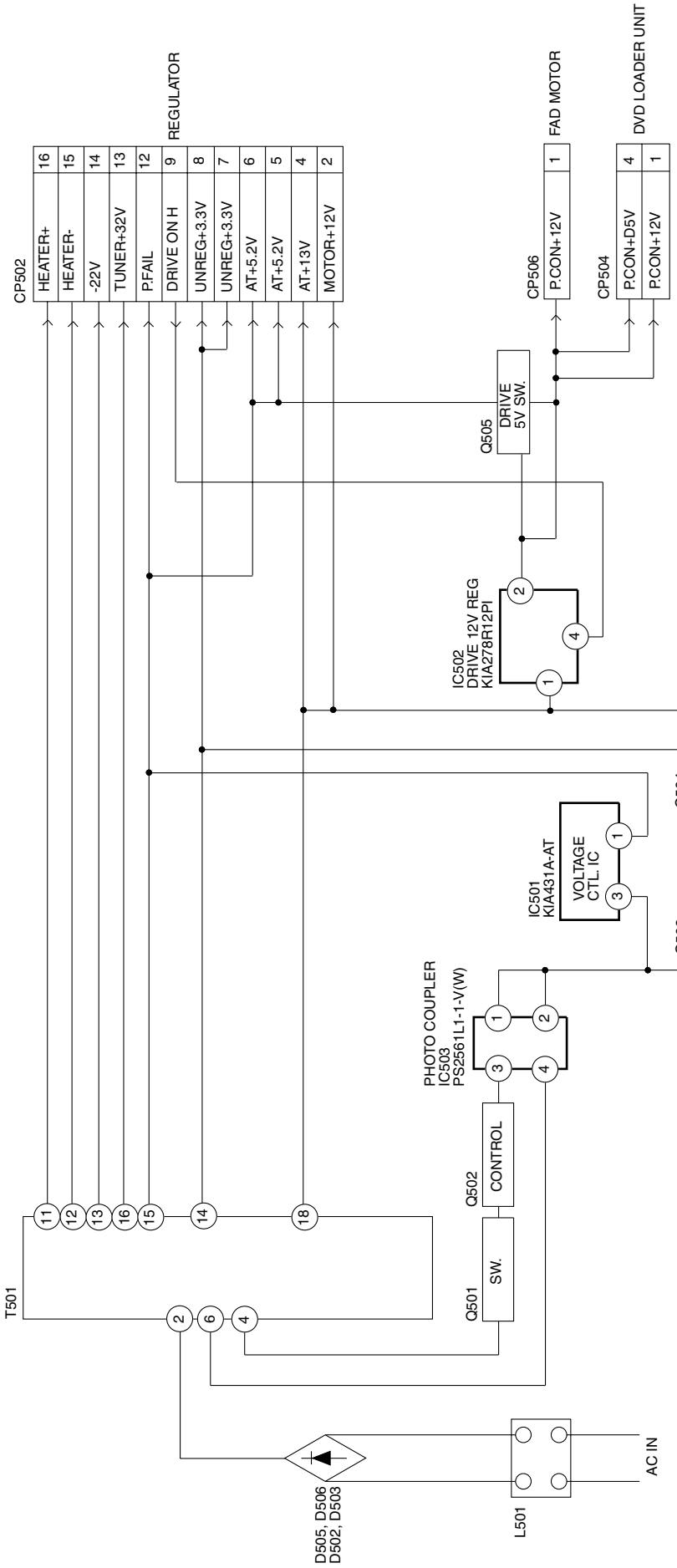
3.1.8 TUNER / JACK BLOCK DIAGRAM



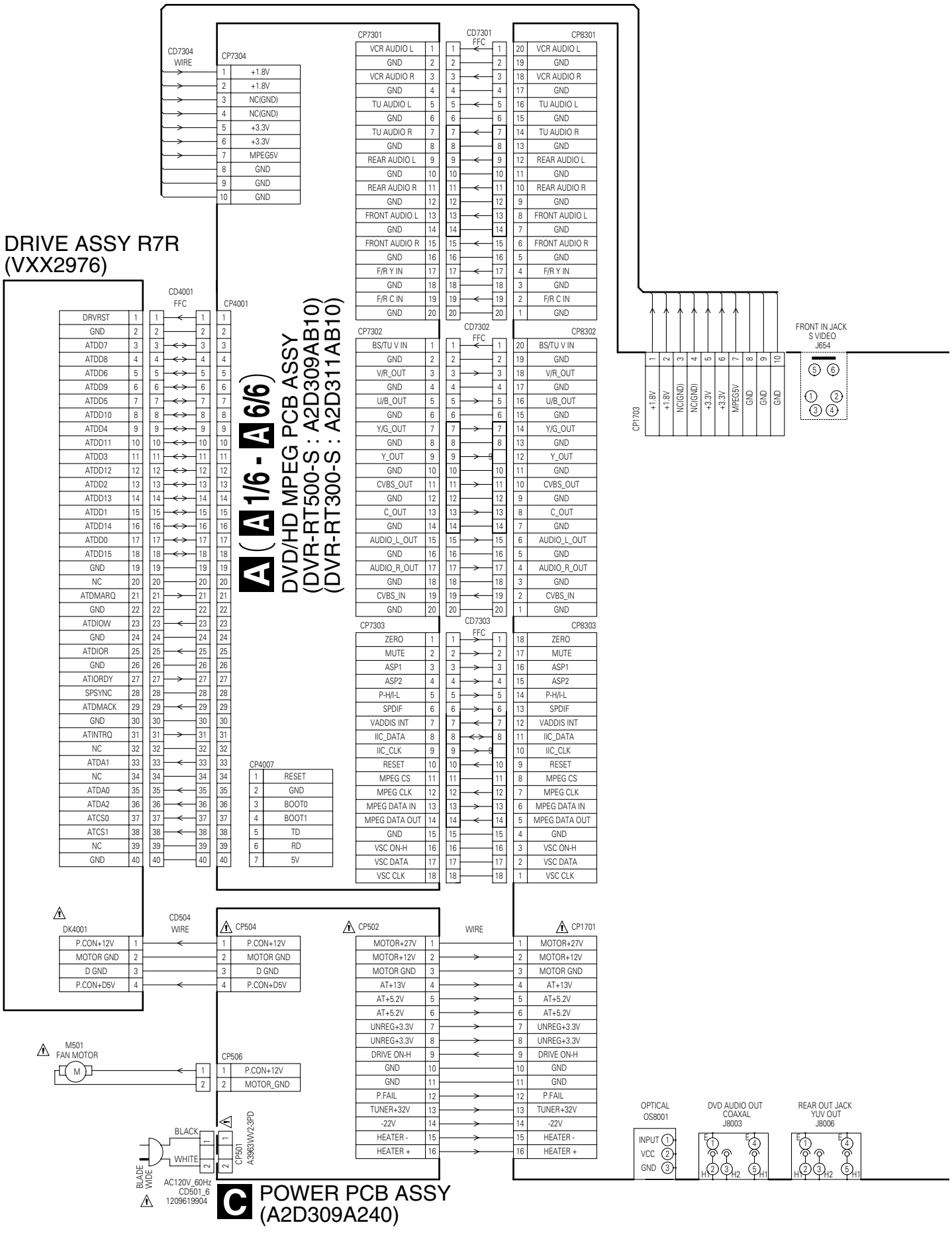
3.1.9 AV SW BLOCK DIAGRAM



3.1.10 POWER BLOCK DIAGRAM

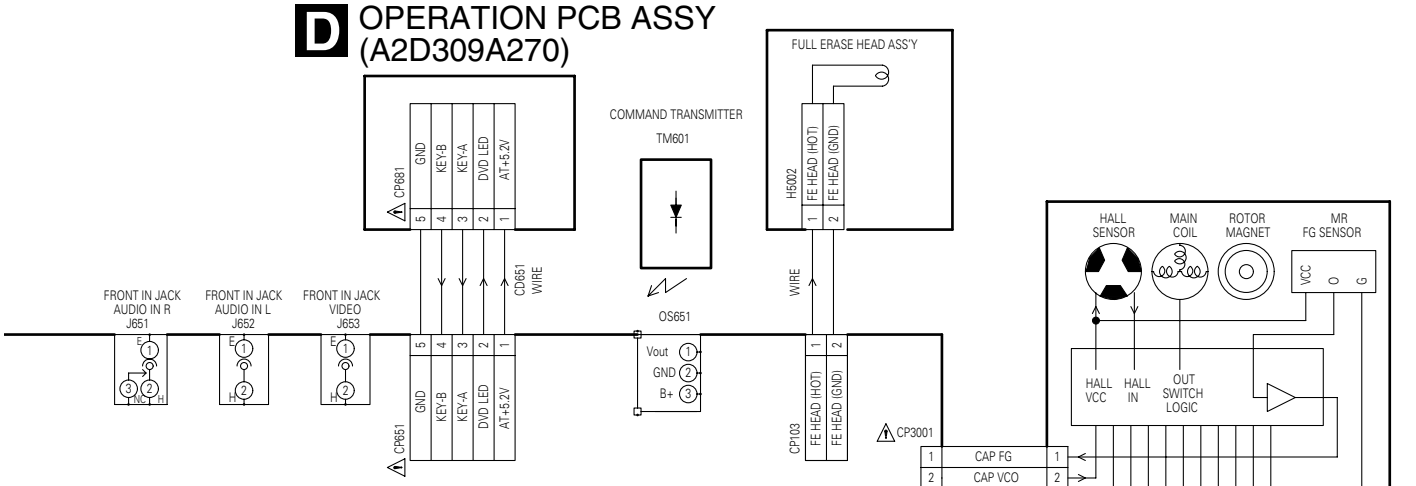


3.2 OVERALL WIRING DIAGRAM

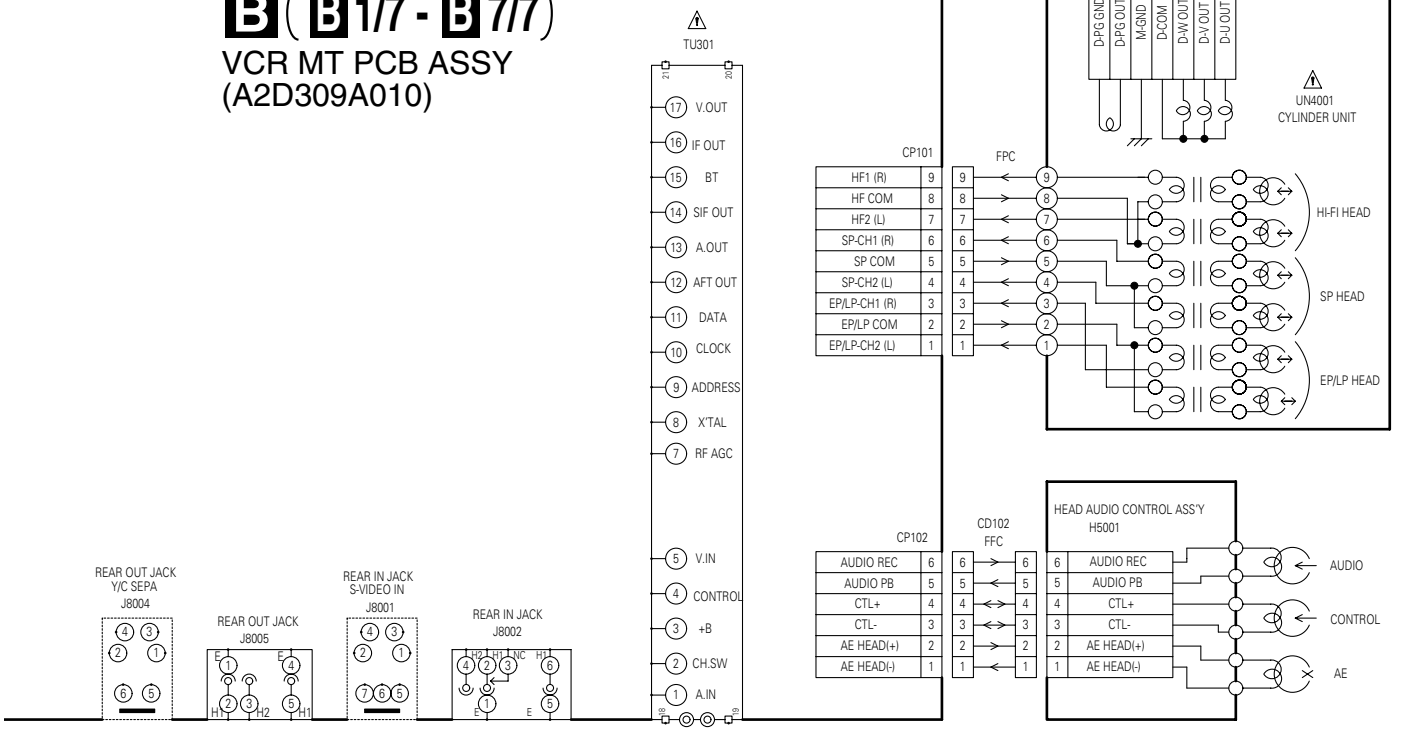


- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.

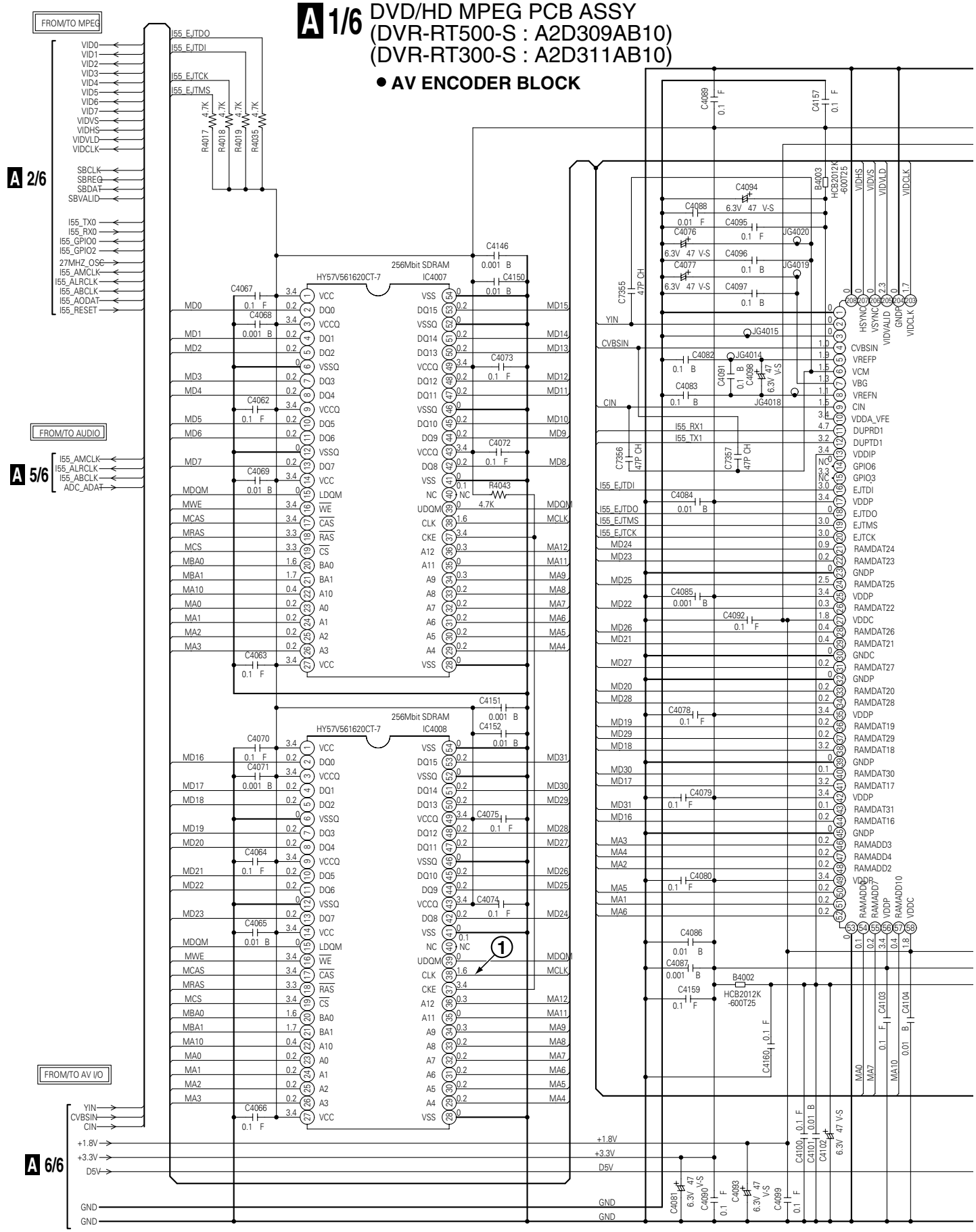
D OPERATION PCB ASSY (A2D309A270)

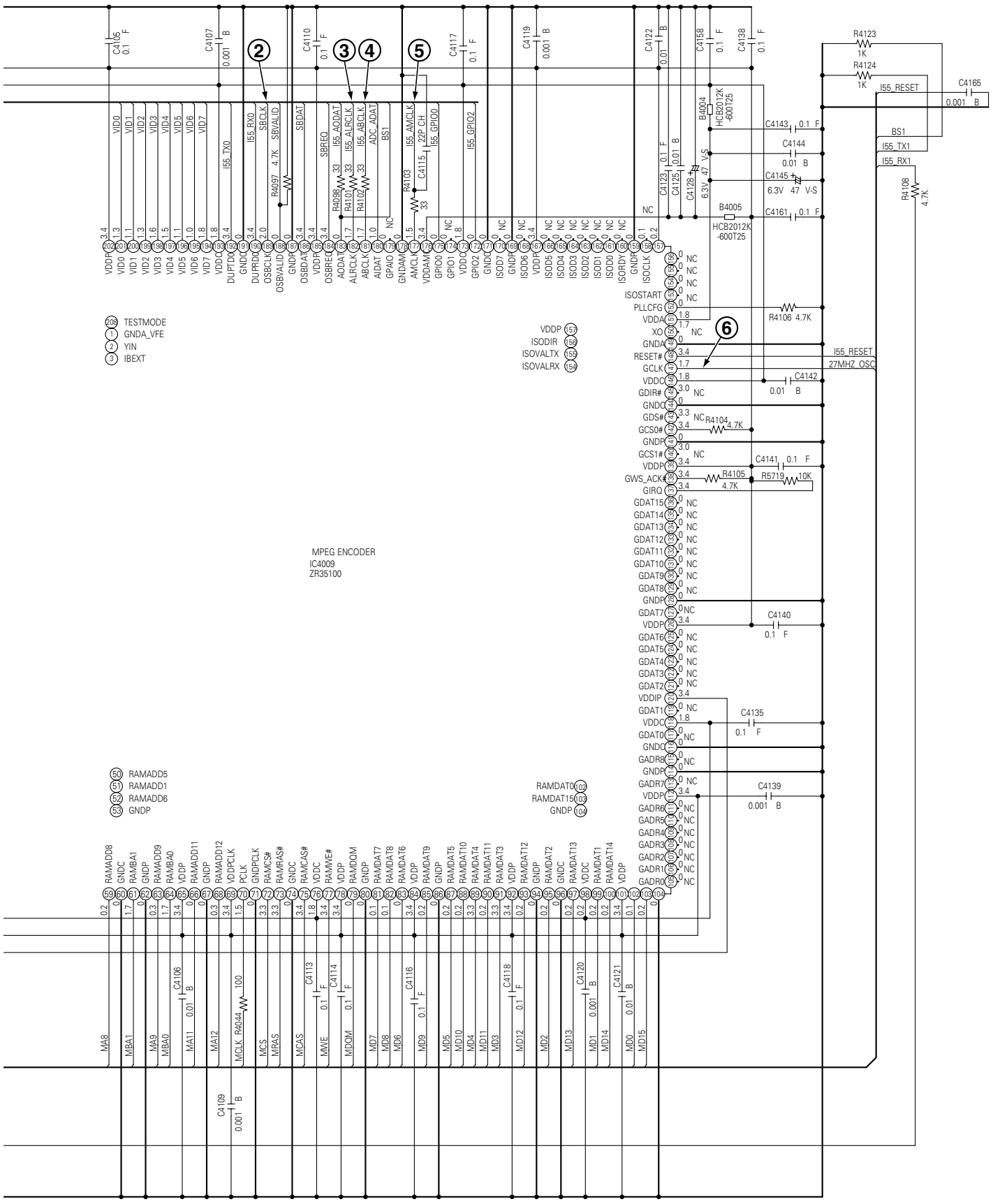


B (B 1/7 - B 7/7) VCR MT PCB ASSY (A2D309A010)



3.3 DVD/HD MPEG PCB ASSY(1/6)



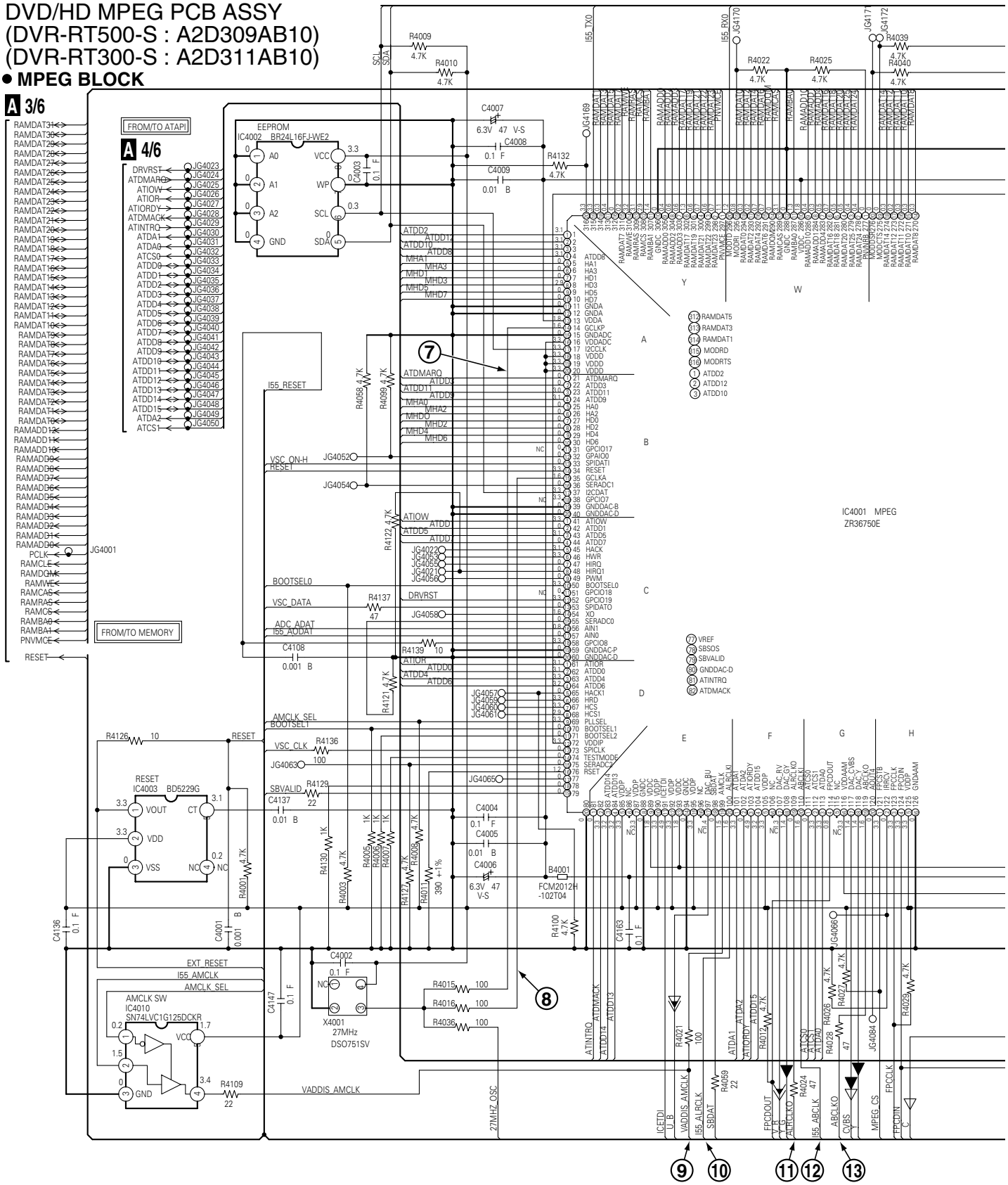

MPEG ENCODER
IC4009
ZR35100
TESTMODE
GNDA_VFE
YIN
IBEXT
RAMADD5
RAMADD1
RAMADD6
GNDP
I55_RESET
27MHZ_OSC
BS1
I55_TX1
I55_RX1
R4123 1K
R4124 1K
R4106 4.7K
R4104 4.7K
R4105 4.7K
R5719 10K
R4108 4.7K
B4004 HCB2012K-600T25
B4005 HCB2012K-600T25
C4165 0.001 B
C4143 0.1 F
C4144 0.01 B
C4145 6.3V 47 V-S
C4161 0.1 F
C4142 0.01 B
C4141 0.1 F
C4140 0.1 F
C4135 0.1 F
C4139 0.001 B
C4105 0.1 F
C4107 0.001 B
C4110 0.1 F
C4117 0.1 F
C4119 0.001 B
C4122 0.01 B
C4158 0.1 F
C4138 0.1 F
C4123 0.1 F
C4125 0.01 B
C4128 6.3V 47 V-S
C4115 22P CH
C4106 0.01 B
C4113 0.1 F
C4114 0.1 F
C4116 0.1 F
C4118 0.1 F
C4120 0.001 B
C4121 0.01 B
C4109 0.001 B
R4044 100
R4097 4.7K
R4098 33
R4101 33
R4102 33
R4103 33
I55_TX0
I55_RX0
SBCLK
SBVALID
SBDAT
SBREQ
I55_AODAT
I55_ALRCLK
I55_ABCLK
ADC_ADAT
BS1
I55_AMCLK
I55_GPIO0
I55_GPIO2
ISOSTART
PLLCFG
XO
RESET#
GCLK
GDIR#
GDS#
GCS0#
GCS1#
GWS_ACK#
GIRQ
MA8
MBA1
MA9
MBA0
MA11
MA12
MCLK
MCS
MRAS
MCAS
MWE#
MDQM
MD7
MD8
MD6
MD9
MD5
MD10
MD4
MD11
MD3
MD12
MD2
MD13
MD1
MD14
MD0
MD15

3.4 DVD/HD MPEG PCB ASSY(2/6)

A 2/6

DVD/HD MPEG PCB ASSY
(DVR-RT500-S : A2D309AB10)
(DVR-RT300-S : A2D311AB10)

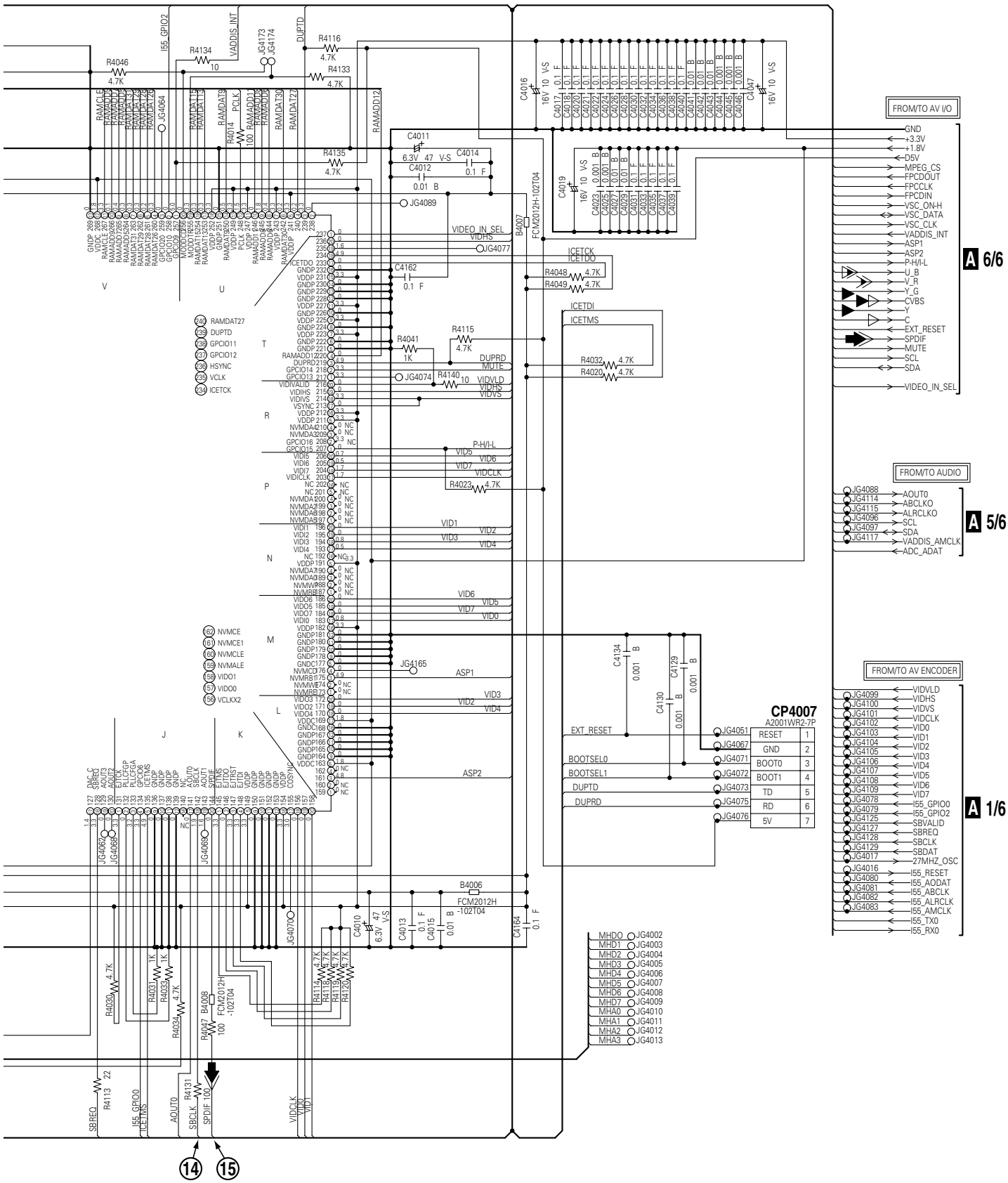
- **MPEG BLOCK**



◀◀ COMPONENT SIGNAL(U)
◀◀ COMPONENT SIGNAL(V)

◀◀ DIGITAL AUDIO SIGNAL(PB)
◁ PLAYBACK COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL

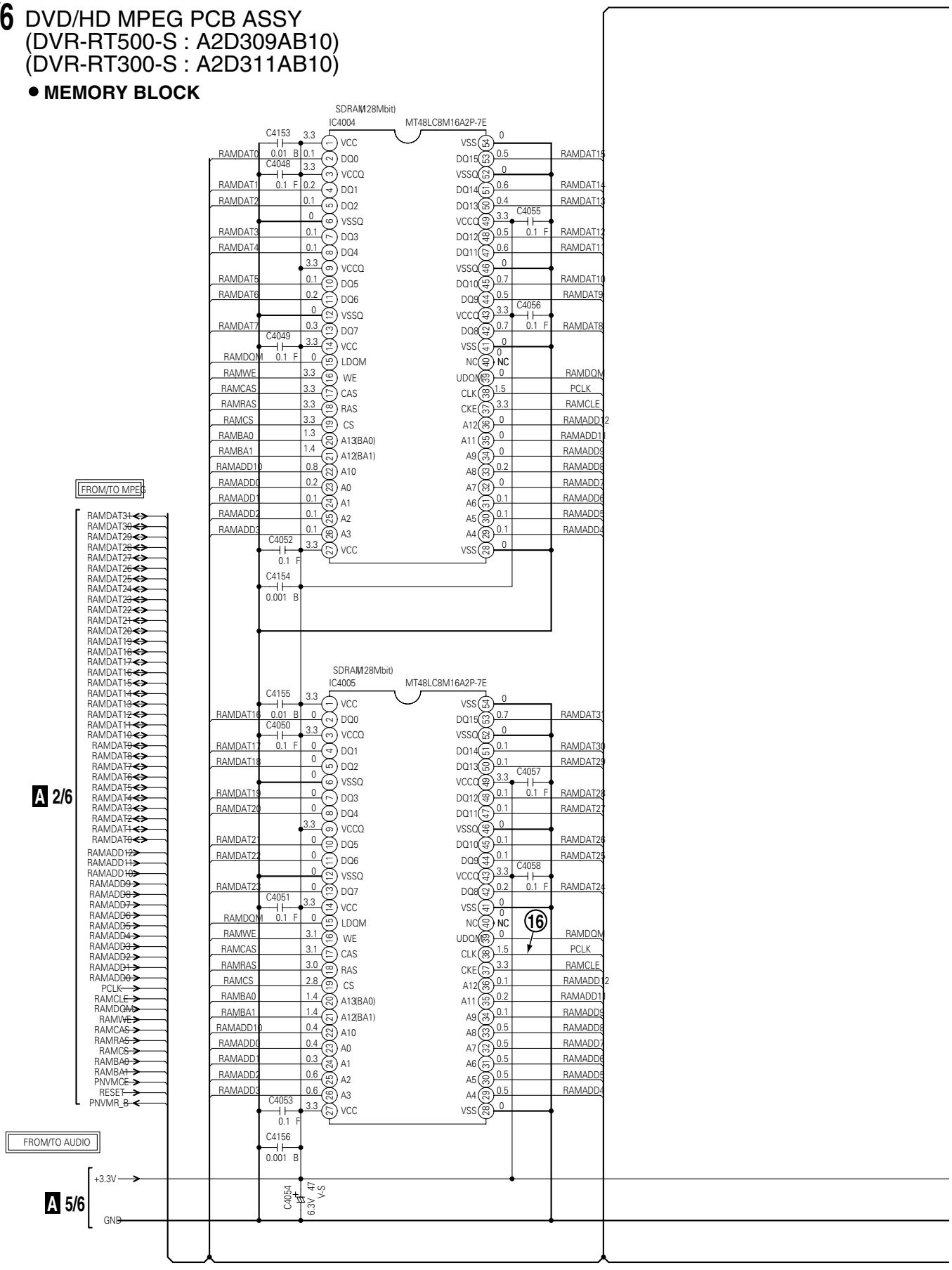
A 2/6

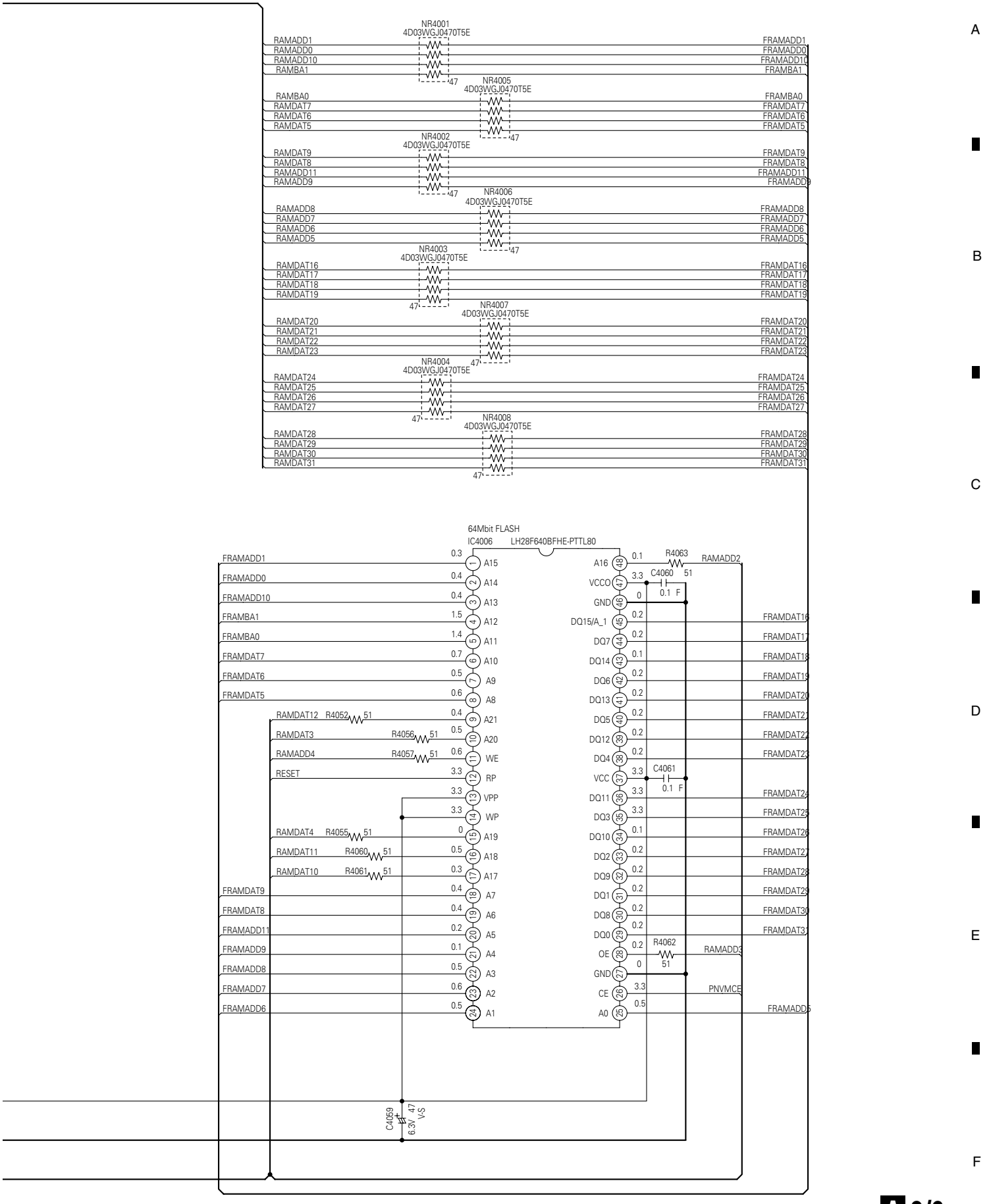

FROM/TO AV I/O
GND
+3.3V
+1.8V
D5V
MPEG_CS
FPCDOUT
FPCCLK
FPCDIN
VSC_ON-H
VSC_DATA
VSC_CLK
VADDIS_INT
ASP1
ASP2
P-H/I-L
U_B
V_R
Y_G
CVBS
Y
C
EXT_RESET
SPDIF
MUTE
SCL
SDA
VIDEO_IN_SEL
A 6/6
FROM/TO AUDIO
JG4088
JG4114
JG4115
JG4096
JG4097
JG4117
AOUT0
ABCLKO
ALRCLKO
SCL
SDA
VADDIS_AMCLK
ADC_ADAT
A 5/6
FROM/TO AV ENCODER
JG4099
JG4100
JG4101
JG4102
JG4103
JG4104
JG4105
JG4106
JG4107
JG4108
JG4109
JG4078
JG4079
JG4125
JG4127
JG4128
JG4129
JG4017
JG4016
JG4080
JG4081
JG4082
JG4083
VIDVLD
VIDHS
VIDVS
VIDCLK
VID0
VID1
VID2
VID3
VID4
VID5
VID6
VID7
I55_GPIO0
I55_GPIO2
SBVALID
SBREQ
SBCLK
SBDAT
27MHZ_OSC
I55_RESET
I55_AODAT
I55_ABCLK
I55_ALRCLK
I55_AMCLK
I55_TX0
I55_RX0
A 1/6
CP4007
A2001WR2-7P
RESET 1
GND 2
BOOT0 3
BOOT1 4
TD 5
RD 6
5V 7
JG4051
JG4067
JG4071
JG4072
JG4073
JG4075
JG4076
EXT_RESET
BOOTSEL0
BOOTSEL1
DUPTD
DUPRD
MHD0 JG4002
MHD1 JG4003
MHD2 JG4004
MHD3 JG4005
MHD4 JG4006
MHD5 JG4007
MHD6 JG4008
MHD7 JG4009
MHA0 JG4010
MHA1 JG4011
MHA2 JG4012
MHA3 JG4013
A 2/6

3.5 DVD/HD MPEG PCB ASSY(3/6)

A 3/6 DVD/HD MPEG PCB ASSY
(DVR-RT500-S : A2D309AB10)
(DVR-RT300-S : A2D311AB10)

- **MEMORY BLOCK**

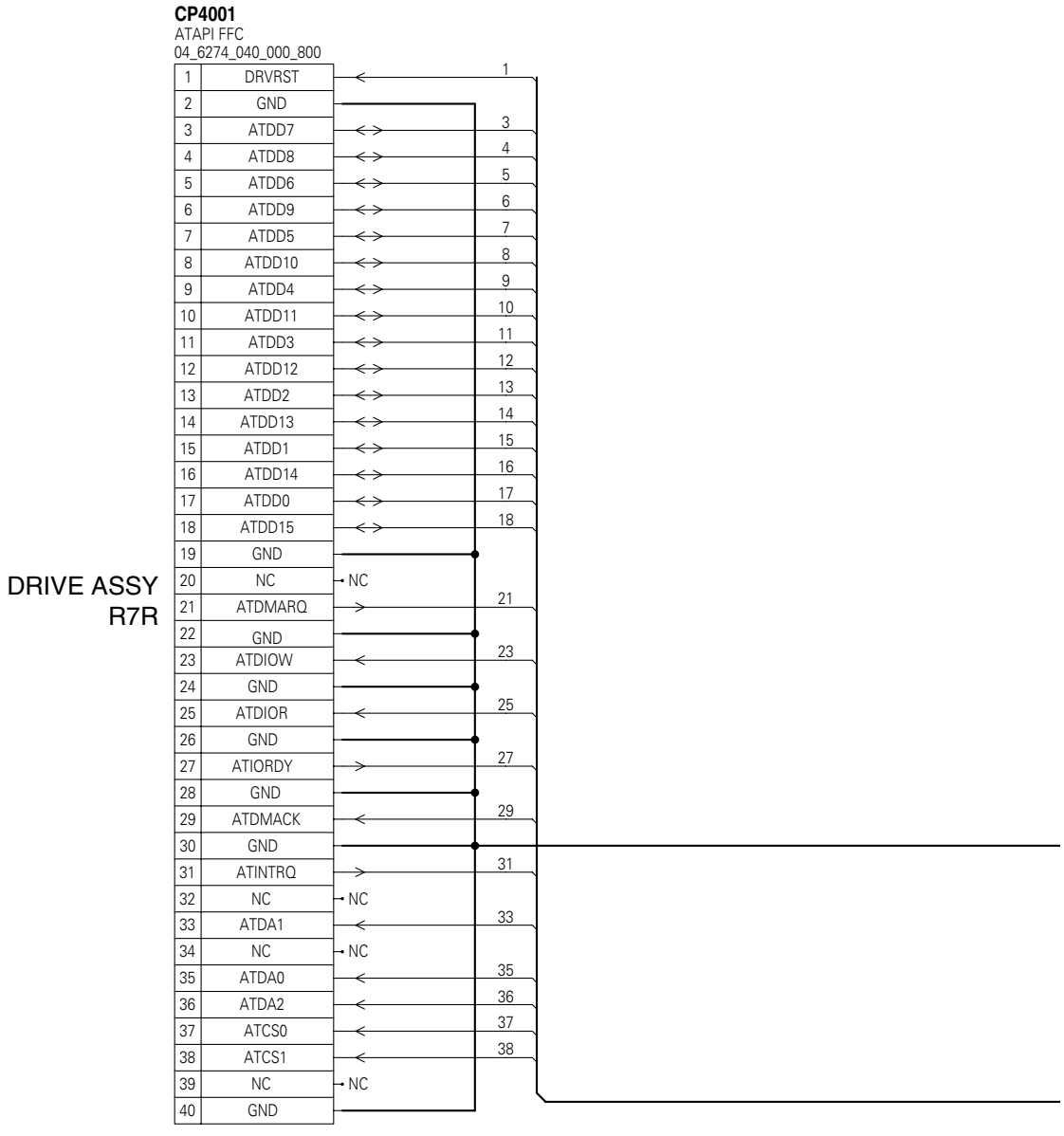


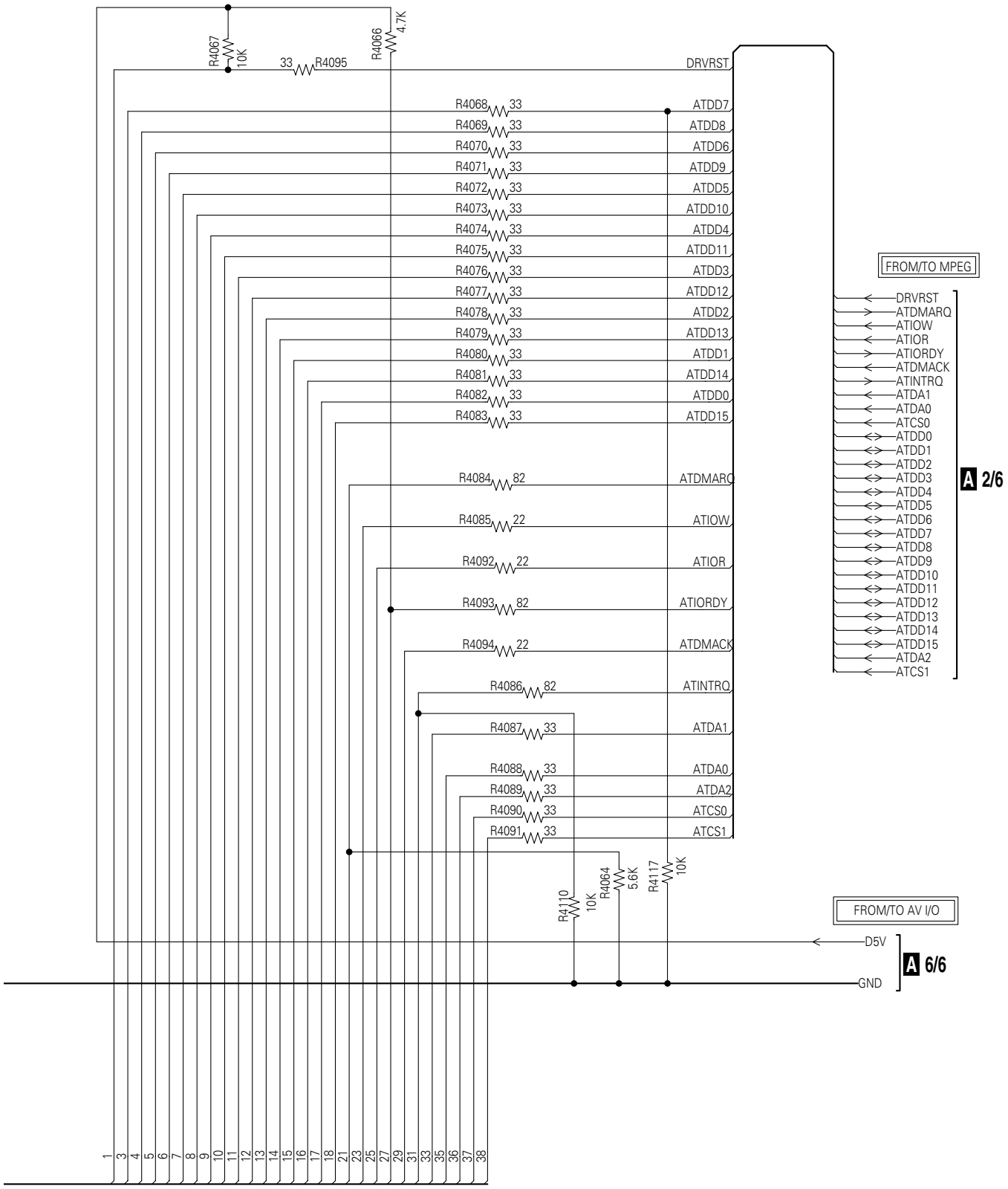

NR4001
4D03WGJ0470T5E
RAMADD1
RAMADD0
RAMADD10
RAMBA1
47
FRAMADD1
FRAMADD0
FRAMADD10
FRAMBA1
NR4005
4D03WGJ0470T5E
RAMBA0
RAMDAT7
RAMDAT6
RAMDAT5
47
FRAMBA0
FRAMDAT7
FRAMDAT6
FRAMDAT5
NR4002
4D03WGJ0470T5E
RAMDAT9
RAMDAT8
RAMADD11
RAMADD9
47
FRAMDAT9
FRAMDAT8
FRAMADD11
NR4006
4D03WGJ0470T5E
RAMADD8
RAMADD7
RAMADD6
RAMADD5
47
FRAMADD8
FRAMADD7
FRAMADD6
FRAMADD5
NR4003
4D03WGJ0470T5E
RAMDAT16
RAMDAT17
RAMDAT18
RAMDAT19
47
FRAMDAT16
FRAMDAT17
FRAMDAT18
FRAMDAT19
NR4007
4D03WGJ0470T5E
RAMDAT20
RAMDAT21
RAMDAT22
RAMDAT23
47
FRAMDAT20
FRAMDAT21
FRAMDAT22
FRAMDAT23
NR4004
4D03WGJ0470T5E
RAMDAT24
RAMDAT25
RAMDAT26
RAMDAT27
47
FRAMDAT24
FRAMDAT25
FRAMDAT26
FRAMDAT27
NR4008
4D03WGJ0470T5E
RAMDAT28
RAMDAT29
RAMDAT30
RAMDAT31
47
FRAMDAT28
FRAMDAT29
FRAMDAT30
FRAMDAT31
64Mbit FLASH
IC4006 LH28F640BFHE-PTTL80
FRAMADD1
FRAMADD0
FRAMADD10
FRAMBA1
FRAMBA0
FRAMDAT7
FRAMDAT6
FRAMDAT5
RAMDAT12 R4052 51
RAMDAT3 R4056 51
RAMADD4 R4057 51
RESET
RAMDAT4 R4055 51
RAMDAT11 R4060 51
RAMDAT10 R4061 51
FRAMDAT9
FRAMDAT8
FRAMADD11
FRAMADD9
FRAMADD8
FRAMADD7
FRAMADD6
A15
A14
A13
A12
A11
A10
A9
A8
A21
A20
WE
RP
VPP
WP
A19
A18
A17
A7
A6
A5
A4
A3
A2
A1
A16
VCCO
GND
DQ15/A_1
DQ7
DQ14
DQ6
DQ13
DQ5
DQ12
DQ4
VCC
DQ11
DQ3
DQ10
DQ2
DQ9
DQ1
DQ8
DQ0
OE
GND
CE
A0
R4063
RAMADD2
C4060 0.1 F
C4061 0.1 F
R4062 51
RAMADD3
PNVMCE
FRAMADD5
FRAMDAT16
FRAMDAT17
FRAMDAT18
FRAMDAT19
FRAMDAT20
FRAMDAT21
FRAMDAT22
FRAMDAT23
FRAMDAT24
FRAMDAT25
FRAMDAT26
FRAMDAT27
FRAMDAT28
FRAMDAT29
FRAMDAT30
FRAMDAT31
C4059 47 6.3V V-S

3.6 DVD/HD MPEG PCB ASSY(4/6)

A 4/6 DVD/HD MPEG PCB ASSY
(DVR-RT500-S : A2D309AB10)
(DVR-RT300-S : A2D311AB10)

- **ATAPI BLOCK**



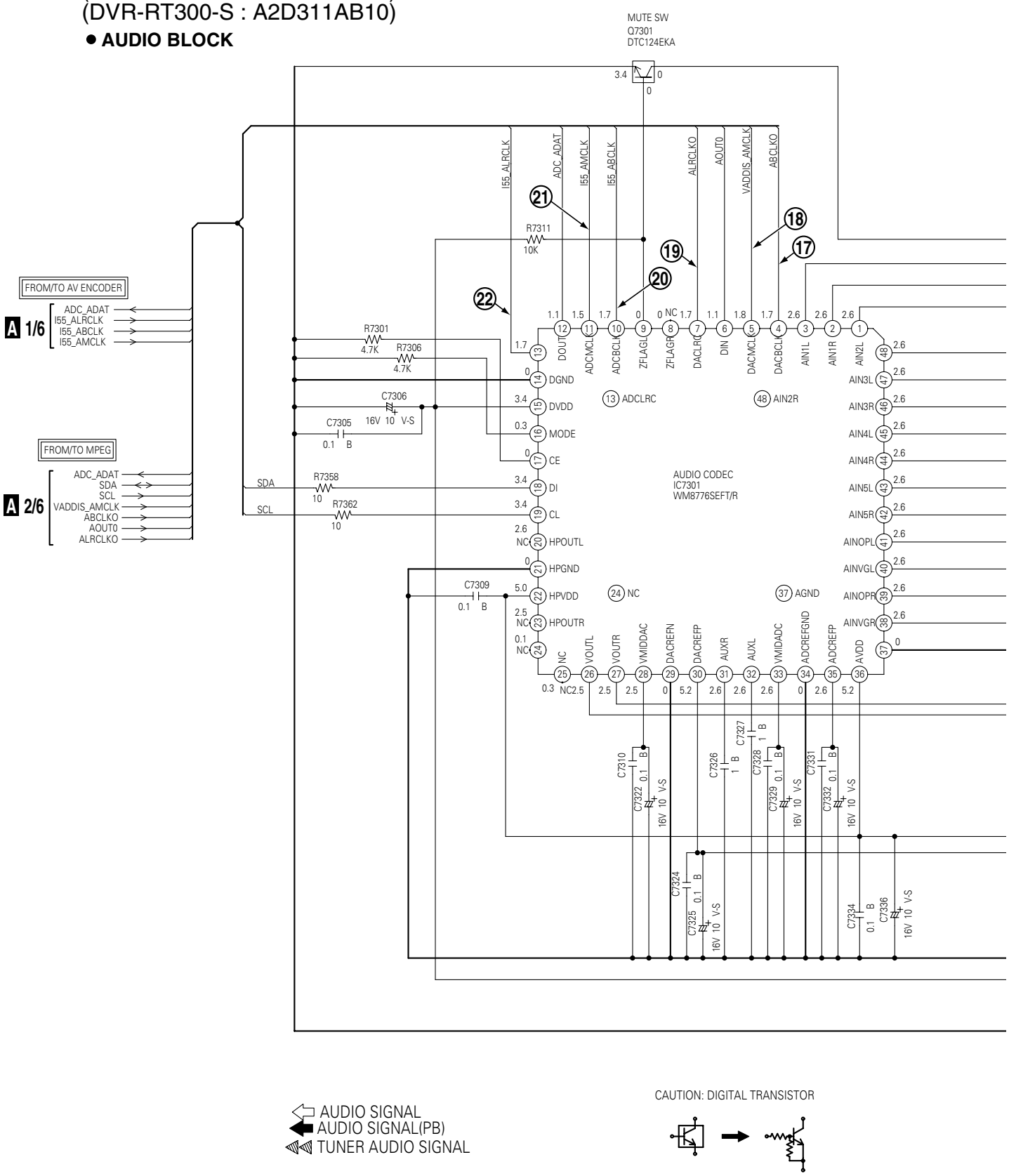

R4067 10K
R4066 4.7K
33 R4095
DRVRST
R4068 33 ATDD7
R4069 33 ATDD8
R4070 33 ATDD6
R4071 33 ATDD9
R4072 33 ATDD5
R4073 33 ATDD10
R4074 33 ATDD4
R4075 33 ATDD11
R4076 33 ATDD3
R4077 33 ATDD12
R4078 33 ATDD2
R4079 33 ATDD13
R4080 33 ATDD1
R4081 33 ATDD14
R4082 33 ATDD0
R4083 33 ATDD15
R4084 82 ATDMARQ
R4085 22 ATIOW
R4092 22 ATIOR
R4093 82 ATIORDY
R4094 22 ATDMACK
R4086 82 ATINTRQ
R4087 33 ATDA1
R4088 33 ATDA0
R4089 33 ATDA2
R4090 33 ATCS0
R4091 33 ATCS1
R4110 10K
R4064 5.6K
R4117 10K
FROM/TO MPEG
DRVRST
ATDMARQ
ATIOW
ATIOR
ATIORDY
ATDMACK
ATINTRQ
ATDA1
ATDA0
ATCS0
ATDD0
ATDD1
ATDD2
ATDD3
ATDD4
ATDD5
ATDD6
ATDD7
ATDD8
ATDD9
ATDD10
ATDD11
ATDD12
ATDD13
ATDD14
ATDD15
ATDA2
ATCS1
A 2/6
FROM/TO AV I/O
D5V
GND
A 6/6
1 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 21 23 25 27 29 31 33 35 36 37 38

A 4/6

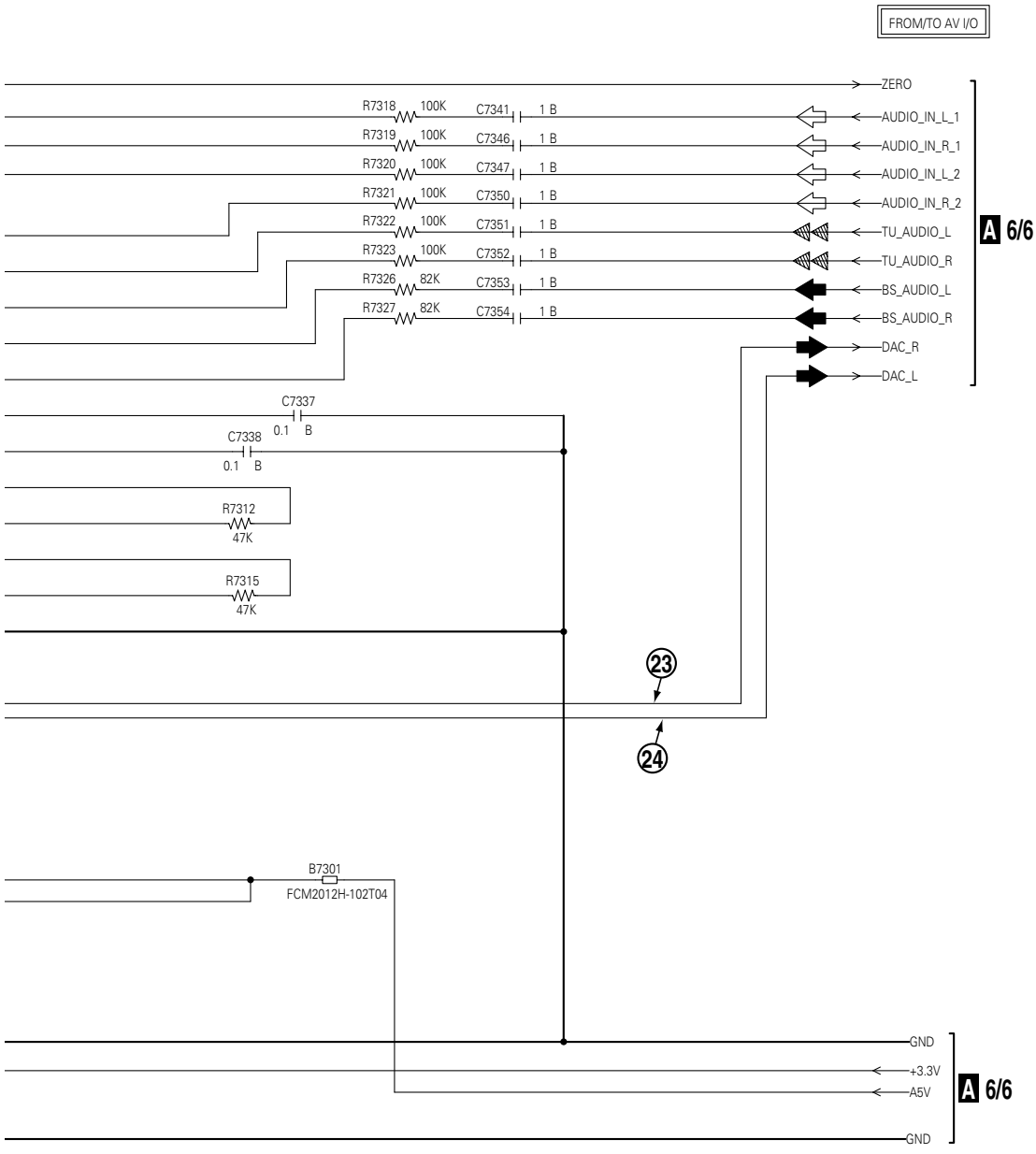
3.7 DVD/HD MPEG PCB ASSY(5/6)

A 5/6 DVD/HD MPEG PCB ASSY
(DVR-RT500-S : A2D309AB10)
(DVR-RT300-S : A2D311AB10)

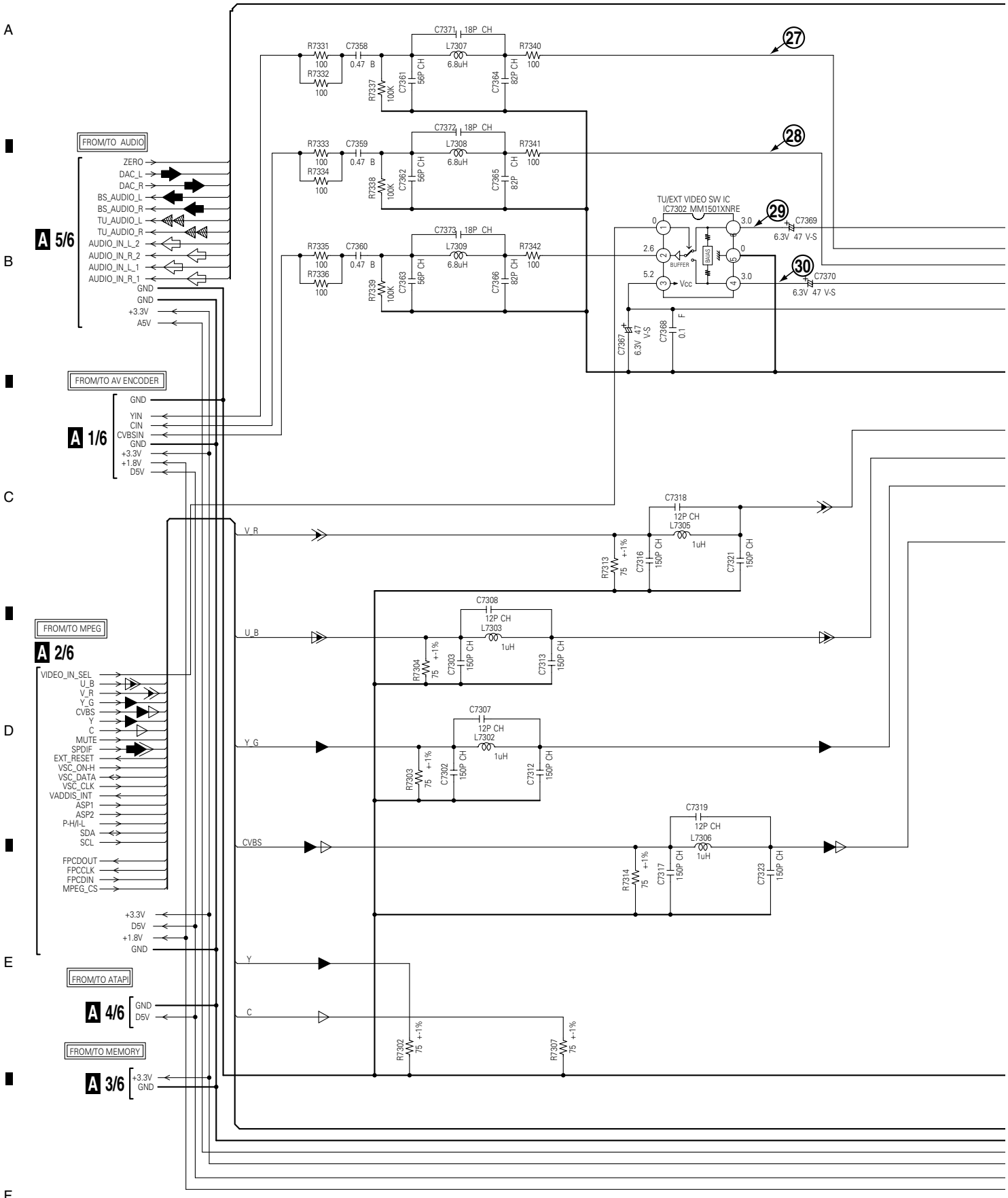
- **AUDIO BLOCK**



A 5/6


FROM/TO AV I/O
ZERO
R7318 100K
C7341 1 B
AUDIO_IN_L_1
R7319 100K
C7346 1 B
AUDIO_IN_R_1
R7320 100K
C7347 1 B
AUDIO_IN_L_2
R7321 100K
C7350 1 B
AUDIO_IN_R_2
R7322 100K
C7351 1 B
TU_AUDIO_L
R7323 100K
C7352 1 B
TU_AUDIO_R
R7326 82K
C7353 1 B
BS_AUDIO_L
R7327 82K
C7354 1 B
BS_AUDIO_R
DAC_R
DAC_L
A 6/6
C7337 0.1 B
C7338 0.1 B
R7312 47K
R7315 47K
23
24
B7301
FCM2012H-102T04
GND
+3.3V
A5V
A 6/6
GND

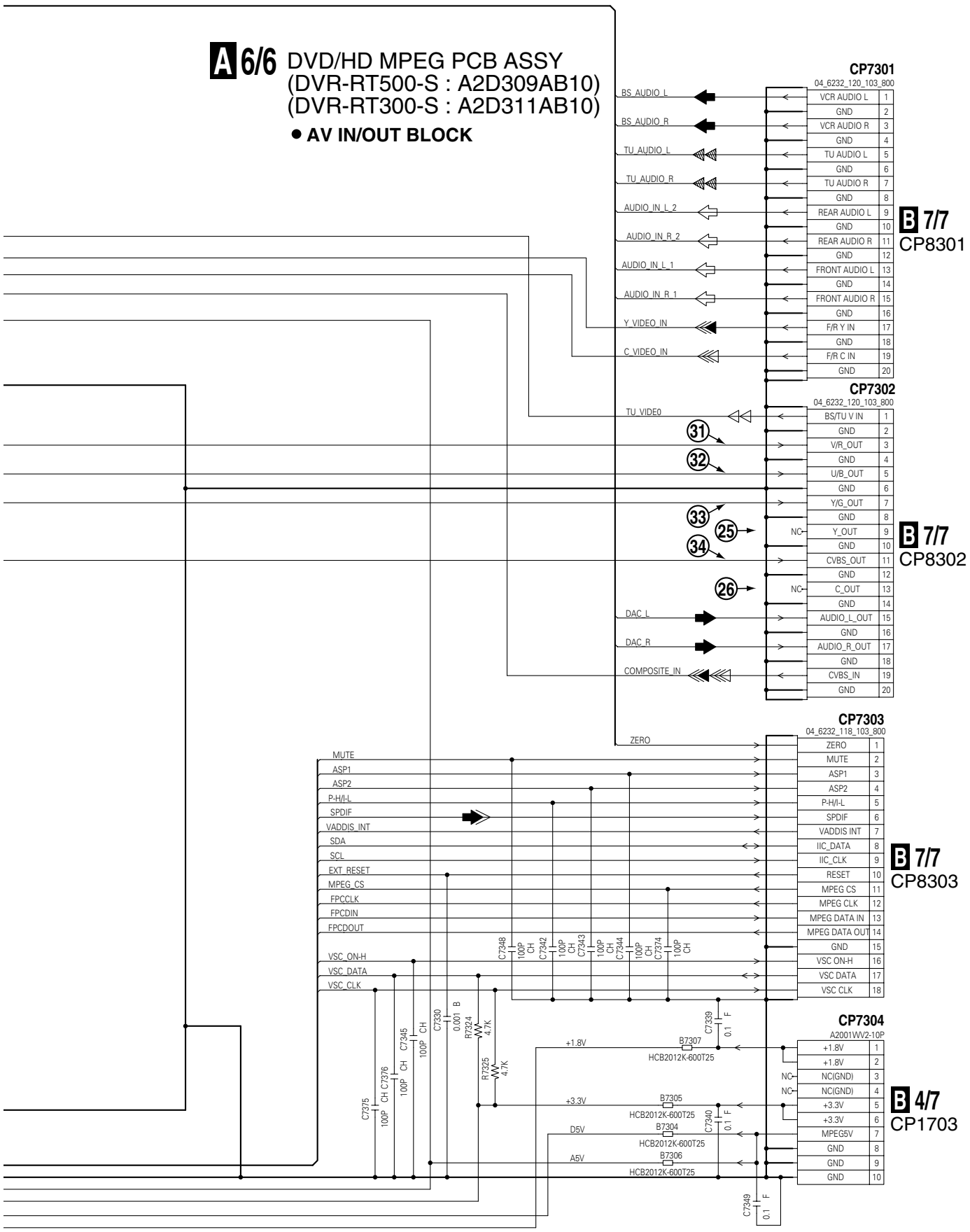
3.8 DVD/HD MPEG PCB ASSY(6/6)



A 6/6

A 6/6 DVD/HD MPEG PCB ASSY
(DVR-RT500-S : A2D309AB10)
(DVR-RT300-S : A2D311AB10)

- **AV IN/OUT BLOCK**



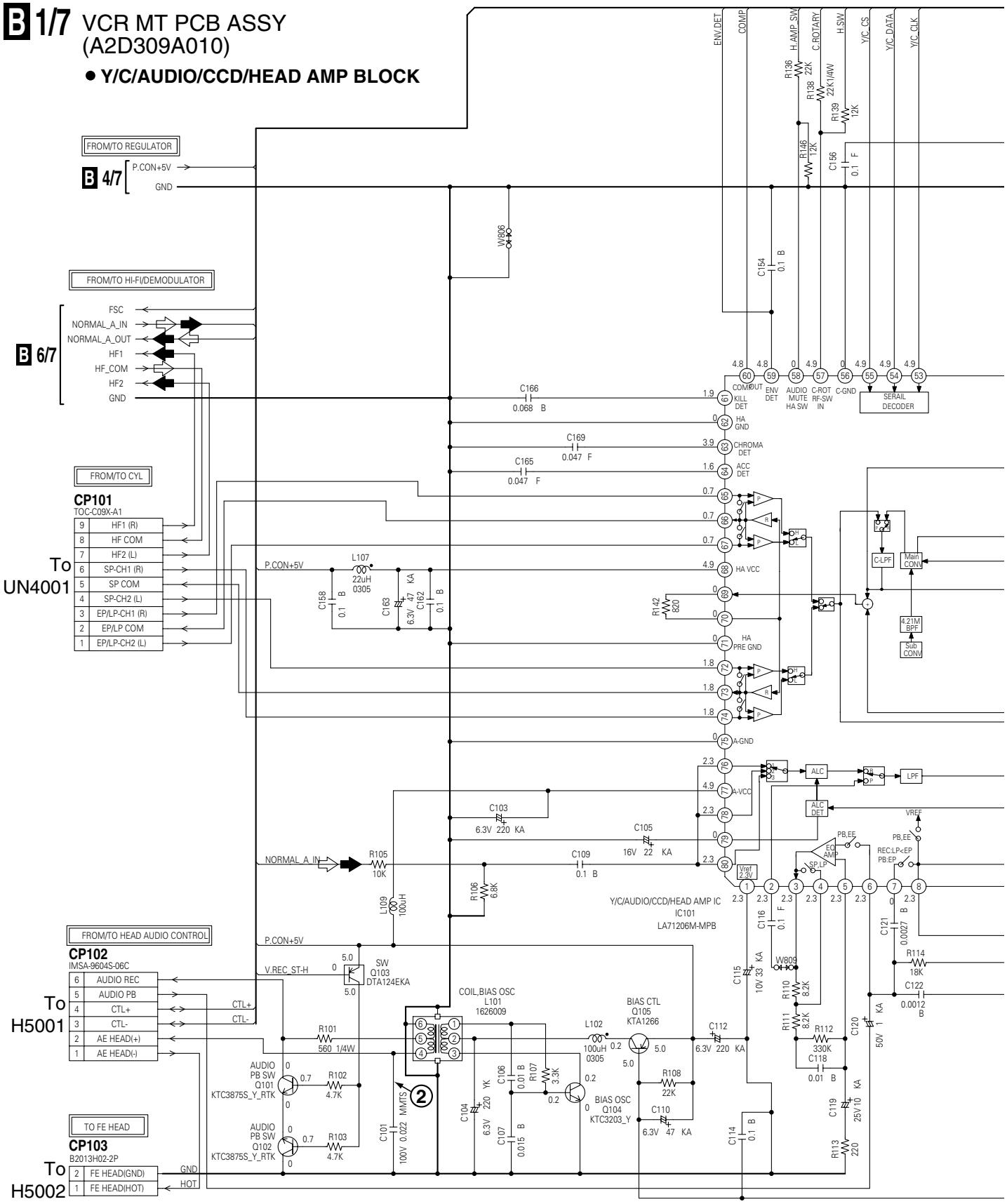
◀ COMPONENT SIGNAL(U)
◀ COMPONENT SIGNAL(V)
◀ PLAYBACK LUMINANCE SIGNAL

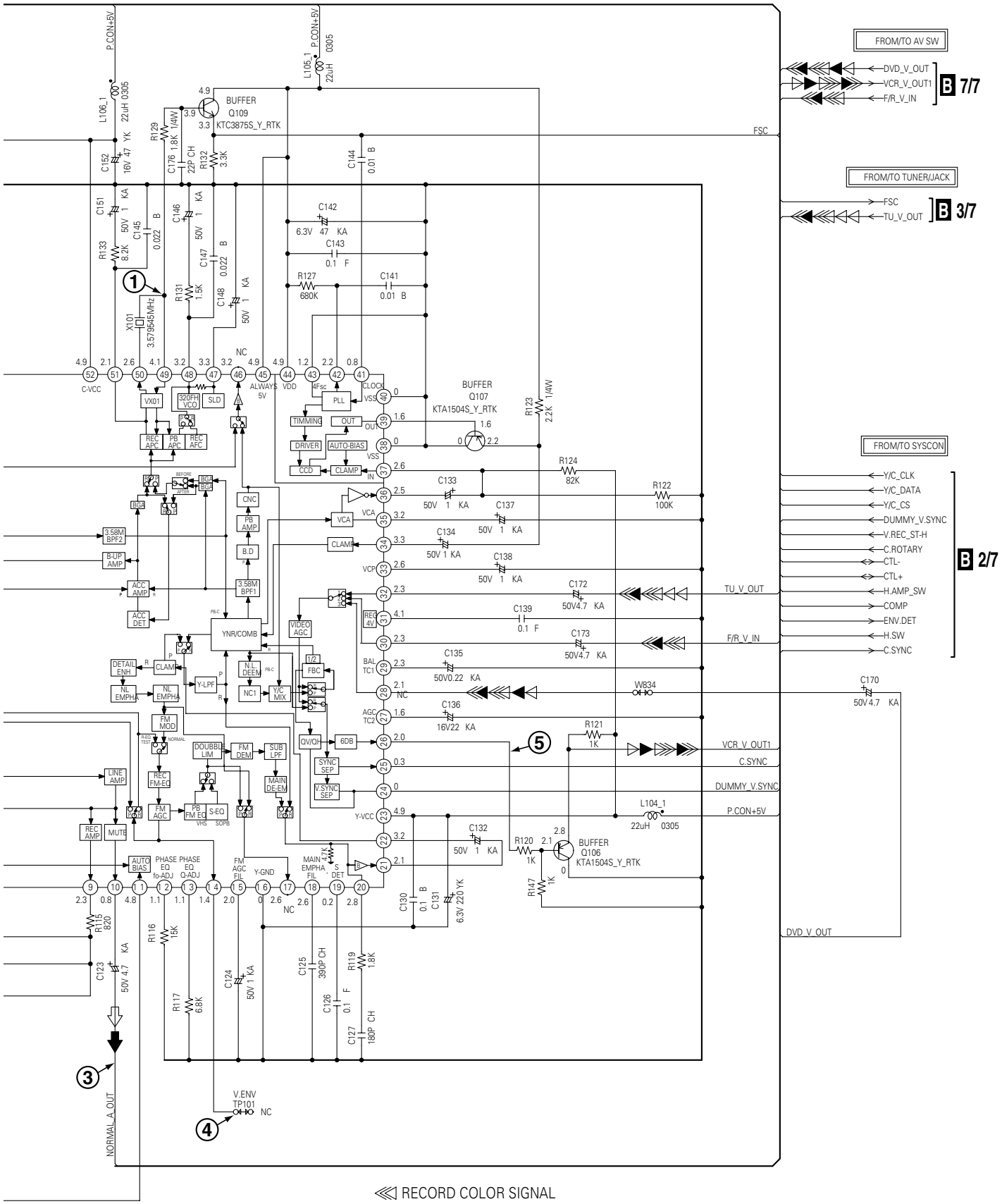
A 6/6

3.9 VCR MT PCB ASSY(1/7)

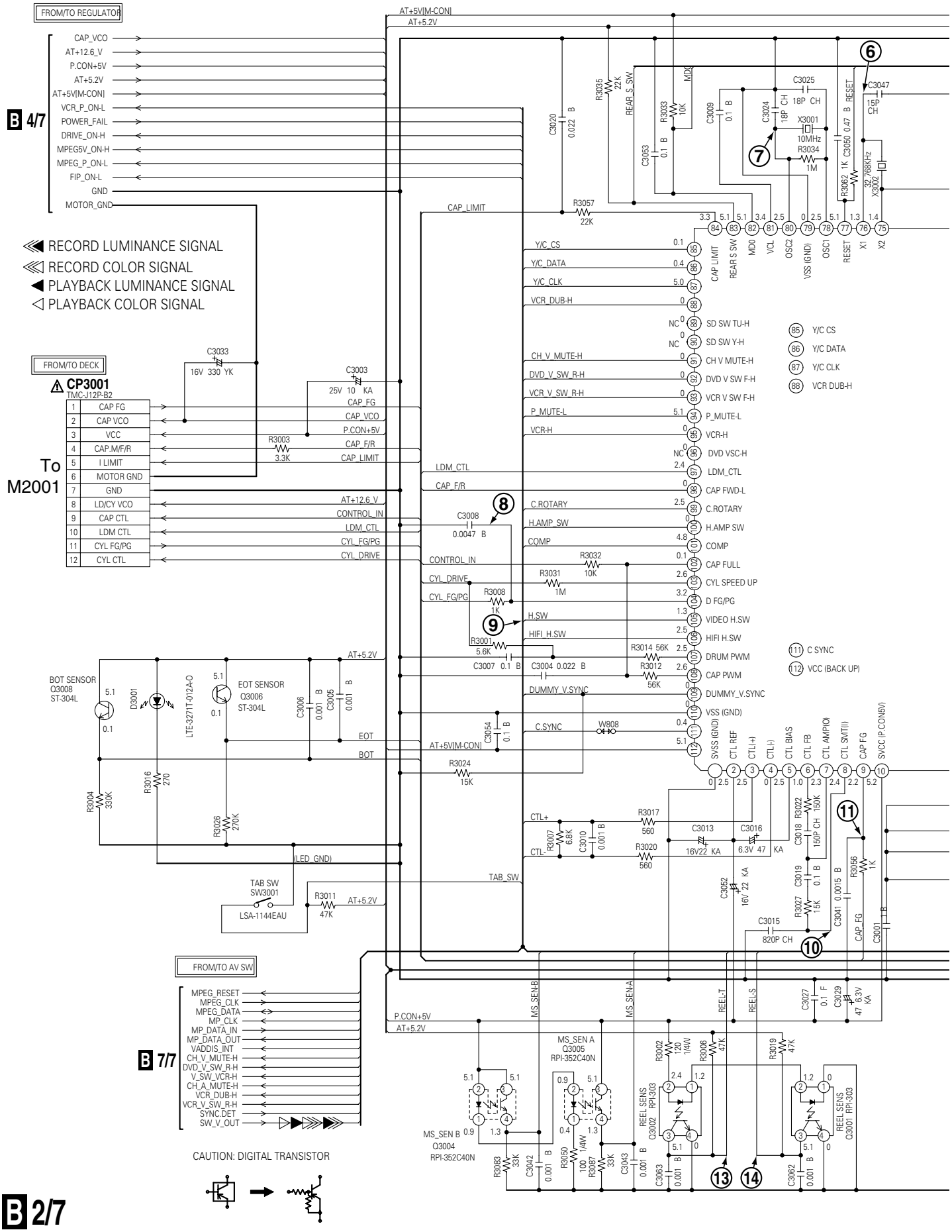
B 1/7 VCR MT PCB ASSY (A2D309A010)

- **Y/C/AUDIO/CCD/HEAD AMP BLOCK**



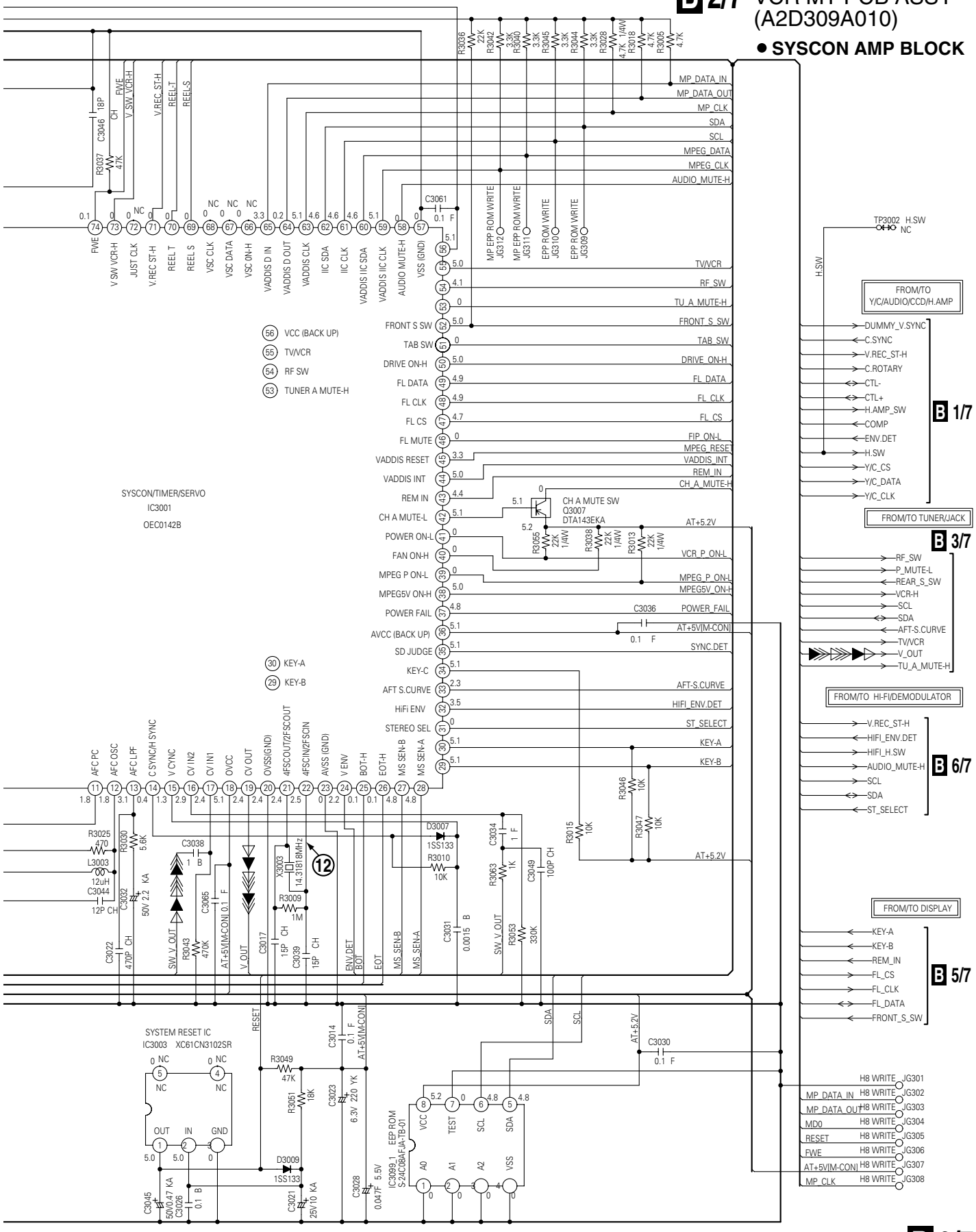

FROM/TO AV SW
DVD_V_OUT
VCR_V_OUT1
F/R_V_IN
B 7/7
FROM/TO TUNER/JACK
FSC
TU_V_OUT
B 3/7
FROM/TO SYSCON
Y/C_CLK
Y/C_DATA
Y/C_CS
DUMMY_V.SYNC
V.REC_ST-H
C.ROTARY
CTL-
CTL+
H.AMP_SW
COMP
ENV.DET
H.SW
C.SYNC
B 2/7
BUFFER Q109 KTC3875S_Y_RTK
BUFFER Q107 KTA1504S_Y_RTK
BUFFER Q106 KTA1504S_Y_RTK
X101 3.579545MHz
VX01
320FH VCO
SLD
PLL
TIMMING
DRIVER
AUTO-BIAS
CCD
CLAMP
VCA
CLAMP
YNR/COMB
Y-LPF
NL EMPHA
FM MOD
FM DEM
SUB LPF
MAIN DE-EM
QV/QI
6DB
SYNC SEP
V.SYNC SEP
LINE AMP
REC AMP
MUTE
FM AGC
PB FM EQ
S-EQ
REC FM-EQ
AUTO BIAS
PHASE EQ fo-ADJ
PHASE EQ Q-ADJ
FM AGC FIL
Y-GND
MAIN EMPHA FIL
SYNC DET
VIDEO AGC
YC MIX
FBC
ACC AMP
ACC DET
B.D
B-UP AMP
3.58M BPF1
3.58M BPF2
CNC
PB AMP
DETAIL ENH
N.L. DEEM
NC1
REC APC
PB APC
REC AFC
V.ENV TP101 NC
NORMAL_A_OUT
P.CON+5V
L105_1 22uH 0305
L106_1 22uH 0305
L104_1 22uH 0305
C-VCC
ALWAYS 5V
VDD
4Fsc
VSS
VCP
BAL TC1
AGC TC2
Y-VCC
NC
W834
C170 50V 4.7 KA
R121 1K
R120 1K
R147 1K
R122 100K
R123 2.2K 1/4W
R124 82K
R129 1.8K 1/4W
R132 3.3K
R133 8.2K
R131 1.5K
R127 680K
R141 0.01 B
R115 820
R116 15K
R117 6.8K
R119 1.8K
C142 6.3V 47 KA
C143 0.1 F
C144 0.01 B
C145 0.022 B
C146 50V 1 KA
C147 0.022 B
C148 50V 1 KA
C151 50V 1 KA
C152 16V 47 YK
C176 22P CH
C123 50V 4.7 KA
C124 50V 1 KA
C125 390P CH
C126 0.1 F
C127 180P CH
C130 0.1 B
C131 6.3V 220 YK
C132 50V 1 KA
C133 50V 1 KA
C134 50V 1 KA
C135 50V0.22 KA
C136 16V22 KA
C137 50V 1 KA
C138 50V 1 KA
C139 0.1 F
C172 50V4.7 KA
C173 50V4.7 KA
TU_V_OUT
F/R_V_IN
VCR_V_OUT1
C.SYNC
DUMMY_V.SYNC
P.CON+5V
DVD_V_OUT
CAUTION: DIGITAL TRANSISTOR
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)
PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
TUNER VIDEO SIGNAL

3.10 VCR MT PCB ASSY(2/7)



B 2/7 VCR MT PCB ASSY (A2D309A010)

● SYSCON AMP BLOCK

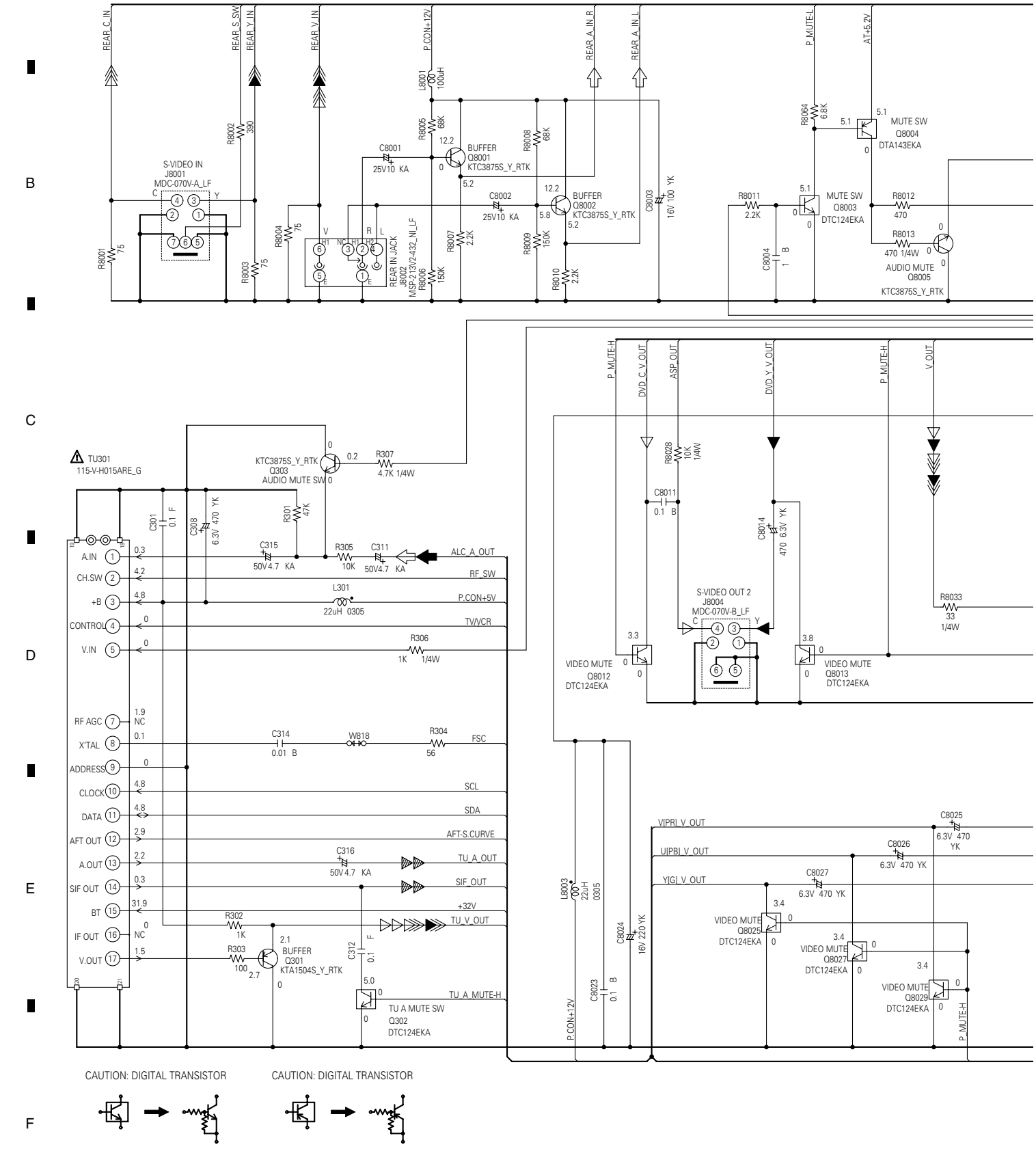


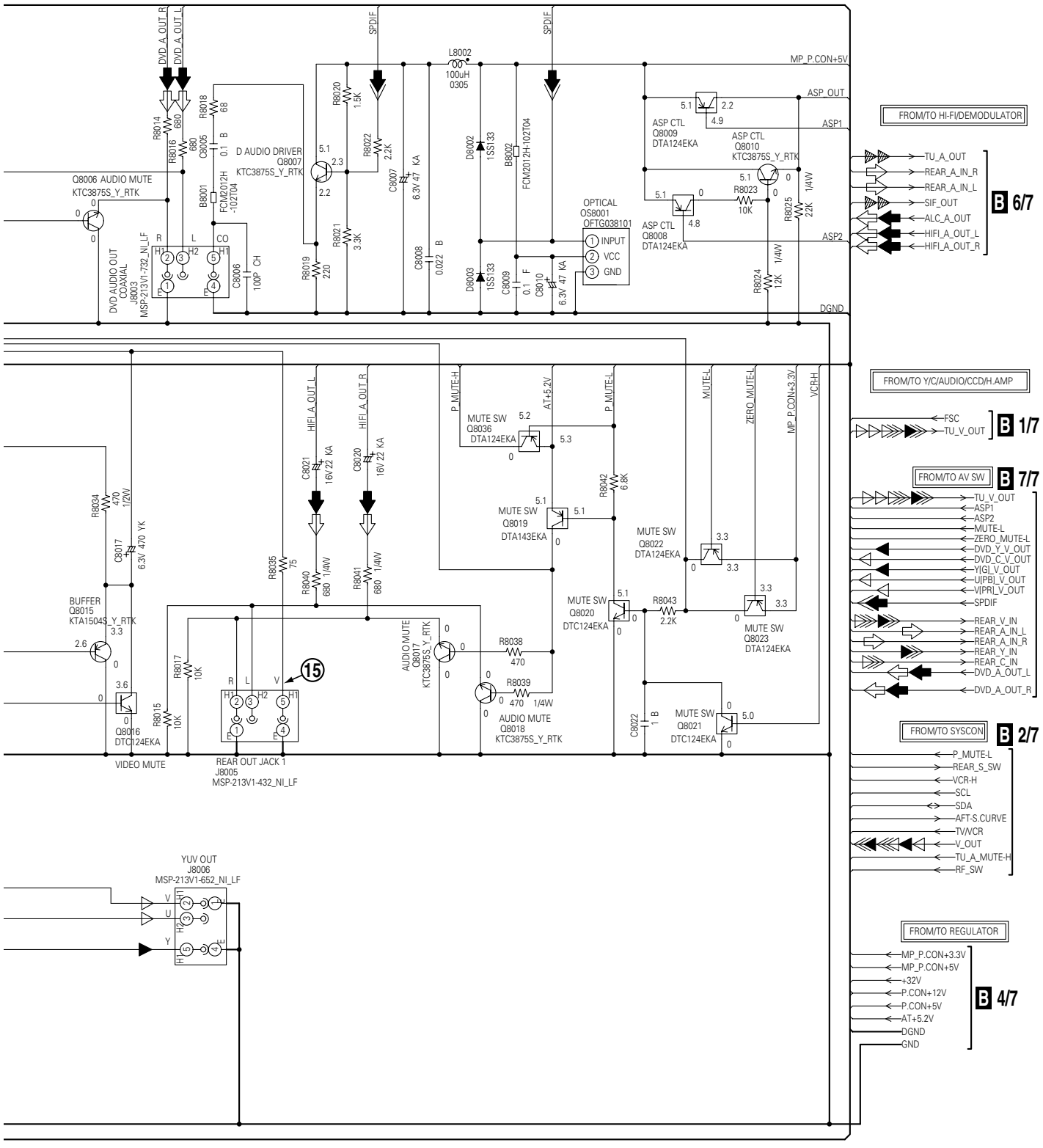
B 2/7

3.11 VCR MT PCB ASSY(3/7)

B 3/7 VCR MT PCB ASSY (A2D309A010)

- **TUNER/JACK BLOCK**

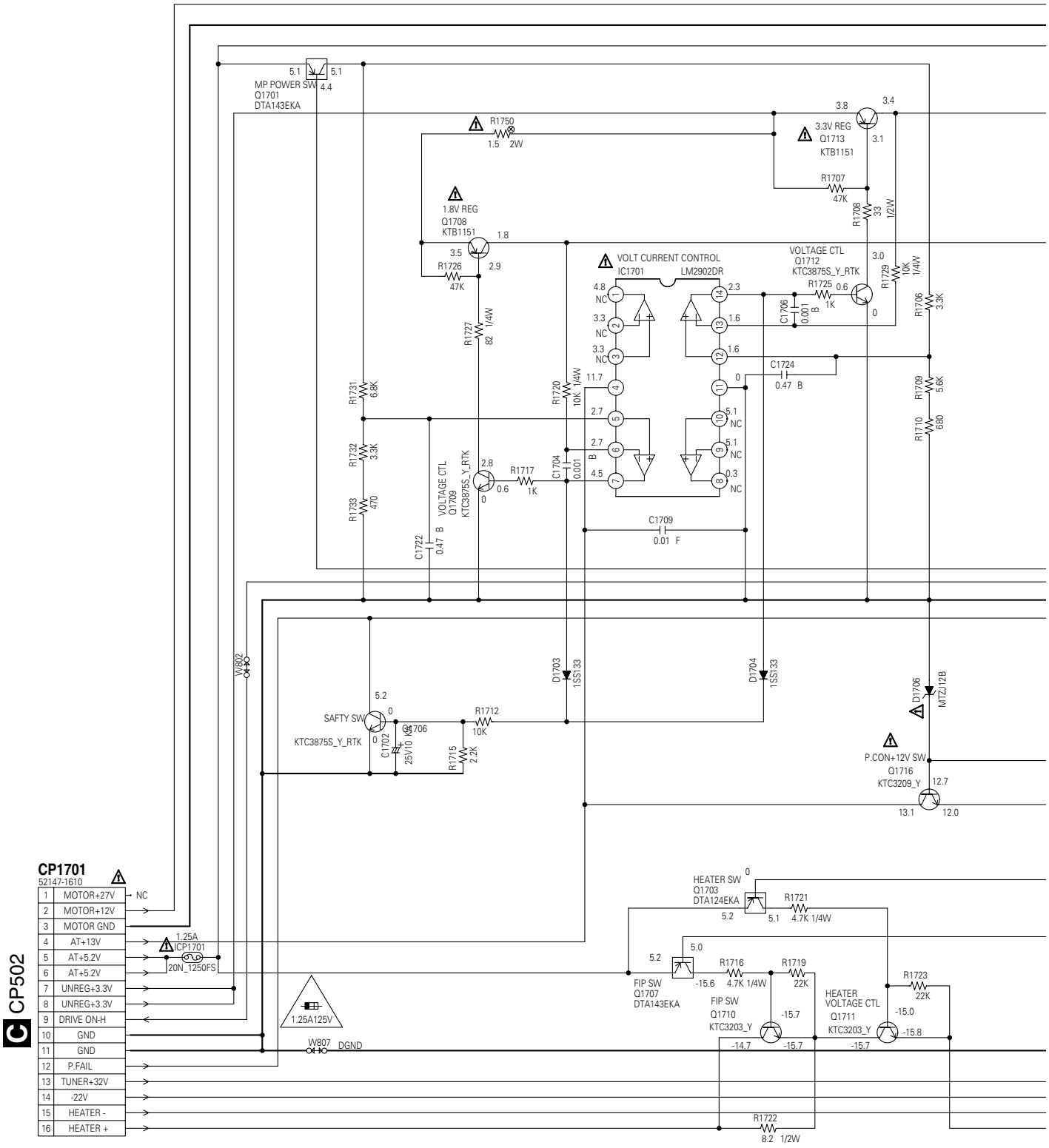



DVD_A_OUT_R
DVD_A_OUT_L
SPDIF
L8002
100uH
0305
MP_P.CON+5V
ASP_OUT
ASP1
ASP2
DGND
Q8006 AUDIO MUTE
KTC3875S_Y_RTK
D AUDIO DRIVER
Q8007
KTC3875S_Y_RTK
DVD AUDIO OUT
COAXIAL
J8003
MSP-213V1-732_NI_LF
OPTICAL
OS8001
OFTG038101
INPUT
VCC
GND
ASP CTL
Q8009
DTA124EKA
ASP CTL
Q8010
KTC3875S_Y_RTK
ASP CTL
Q8008
DTA124EKA
FROM/TO HI-FI/DEMODULATOR
TU_A_OUT
REAR_A_IN_R
REAR_A_IN_L
SIF_OUT
ALC_A_OUT
HIFI_A_OUT_L
HIFI_A_OUT_R
B 6/7
HIFI_A_OUT_L
HIFI_A_OUT_R
P_MUTE-H
AT+5.2V
P_MUTE-L
MUTE-L
ZERO_MUTE-L
MP_P.CON+3.3V
VCR-H
MUTE SW
Q8036
DTA124EKA
MUTE SW
Q8019
DTA143EKA
MUTE SW
Q8022
DTA124EKA
MUTE SW
Q8020
DTC124EKA
MUTE SW
Q8023
DTA124EKA
MUTE SW
Q8021
DTC124EKA
FROM/TO Y/C/AUDIO/CCD/H.AMP
FSC
TU_V_OUT
B 1/7
FROM/TO AV SW
B 7/7
TU_V_OUT
ASP1
ASP2
MUTE-L
ZERO_MUTE-L
DVD_Y_V_OUT
DVD_C_V_OUT
Y[G]_V_OUT
U[PB]_V_OUT
V[PR]_V_OUT
SPDIF
REAR_V_IN
REAR_A_IN_L
REAR_A_IN_R
REAR_Y_IN
REAR_C_IN
DVD_A_OUT_L
DVD_A_OUT_R
BUFFER
Q8015
KTA1504S_Y_RTK
Q8016
DTC124EKA
VIDEO MUTE
AUDIO MUTE
Q8017
KTC3875S_Y_RTK
AUDIO MUTE
Q8018
KTC3875S_Y_RTK
REAR OUT JACK 1
J8005
MSP-213V1-432_NI_LF
FROM/TO SYSCON
B 2/7
P_MUTE-L
REAR_S_SW
VCR-H
SCL
SDA
AFT-S.CURVE
TV/VCR
V_OUT
TU_A_MUTE-H
RF_SW
YUV OUT
J8006
MSP-213V1-652_NI_LF
FROM/TO REGULATOR
MP_P.CON+3.3V
MP_P.CON+5V
+32V
P.CON+12V
P.CON+5V
AT+5.2V
DGND
GND
B 4/7
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
DIGITAL AUDIO SIGNAL(PB)
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)
TUNER AUDIO SIGNAL
TUNER VIDEO SIGNAL
B 3/7

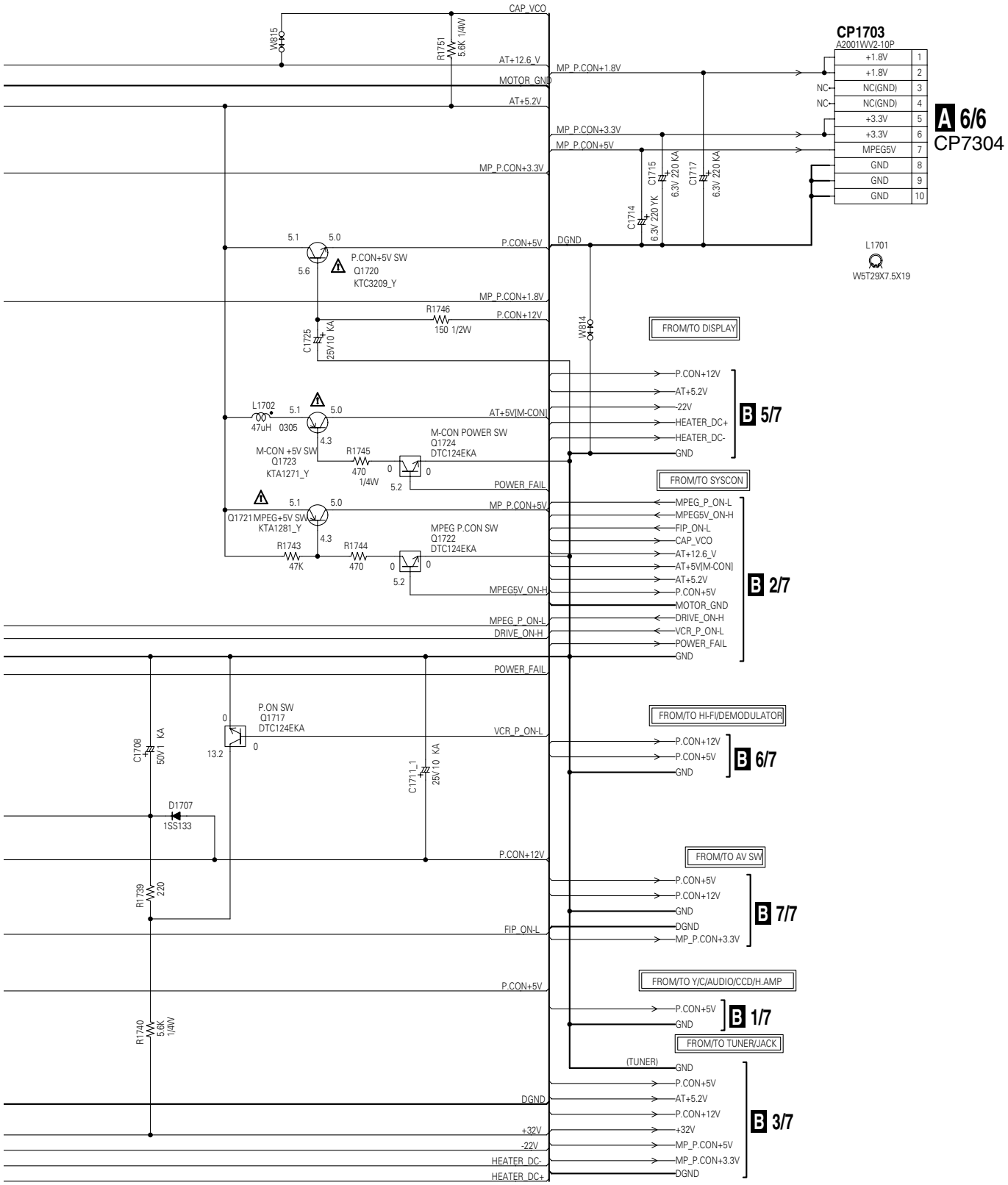
3.12 VCR MT PCB ASSY(4/7)

B 4/7 VCR MT PCB ASSY (A2D309A010)

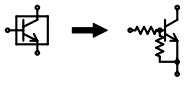
- **REGULATOR BLOCK**



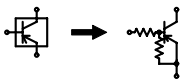
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 20N_1250FS FOR ICP1701 MFD, BY PICO.



CAUTION: DIGITAL TRANSISTOR



CAUTION: DIGITAL TRANSISTOR

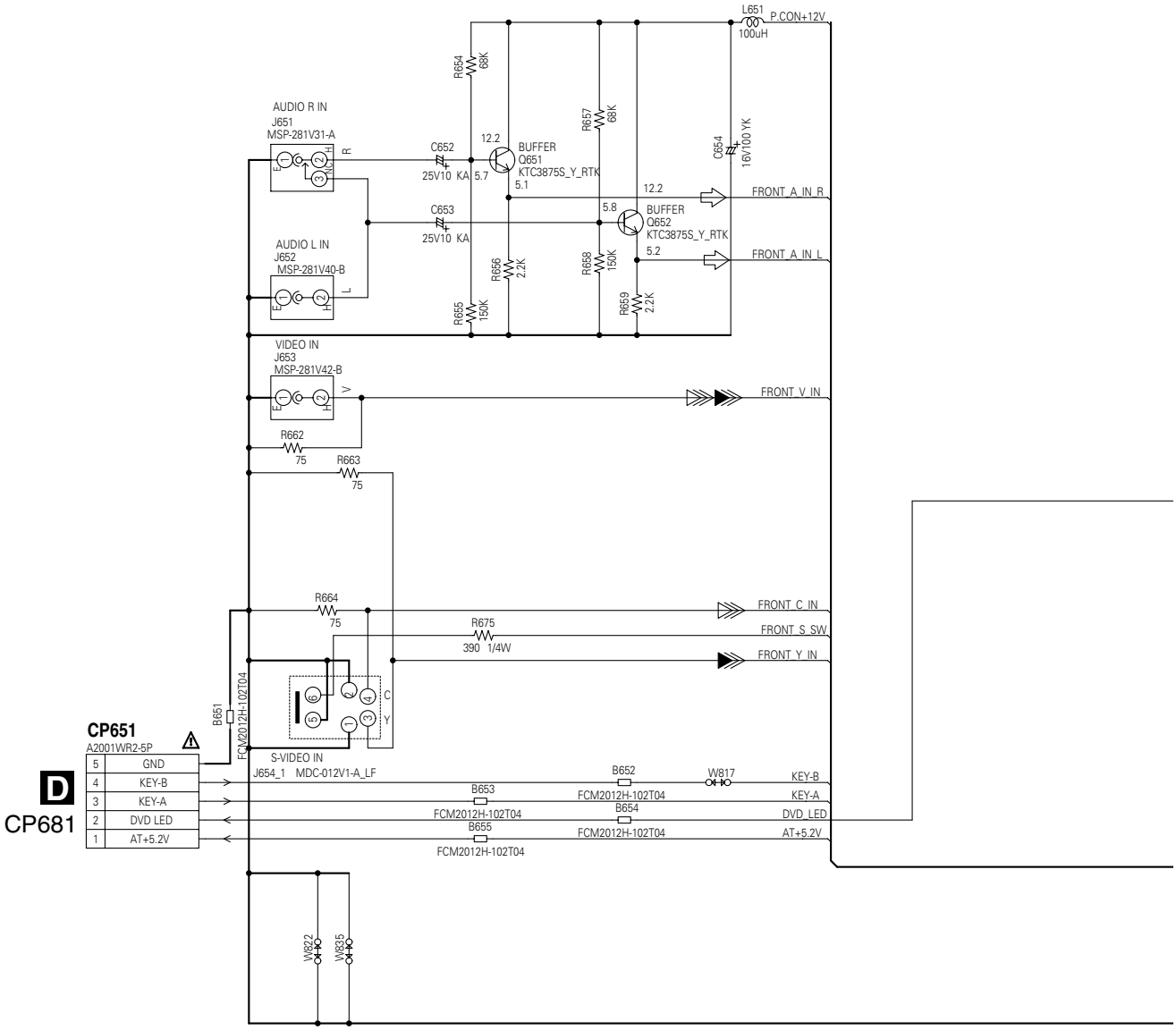


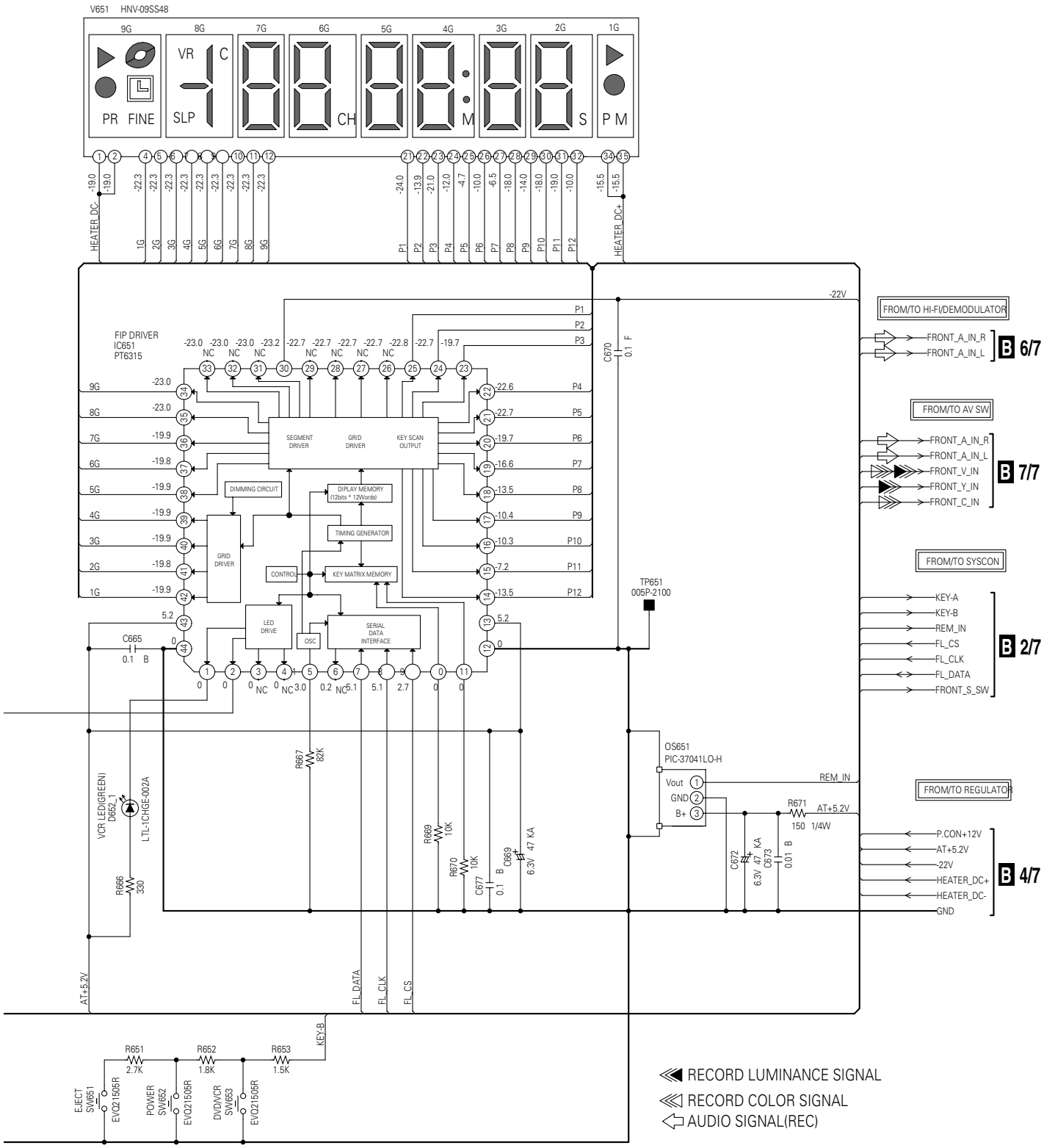
B 4/7

3.13 VCR MT PCB ASSY(5/7)

B 5/7 VCR MT PCB ASSY (A2D309A010)

- **DISPLAY BLOCK**



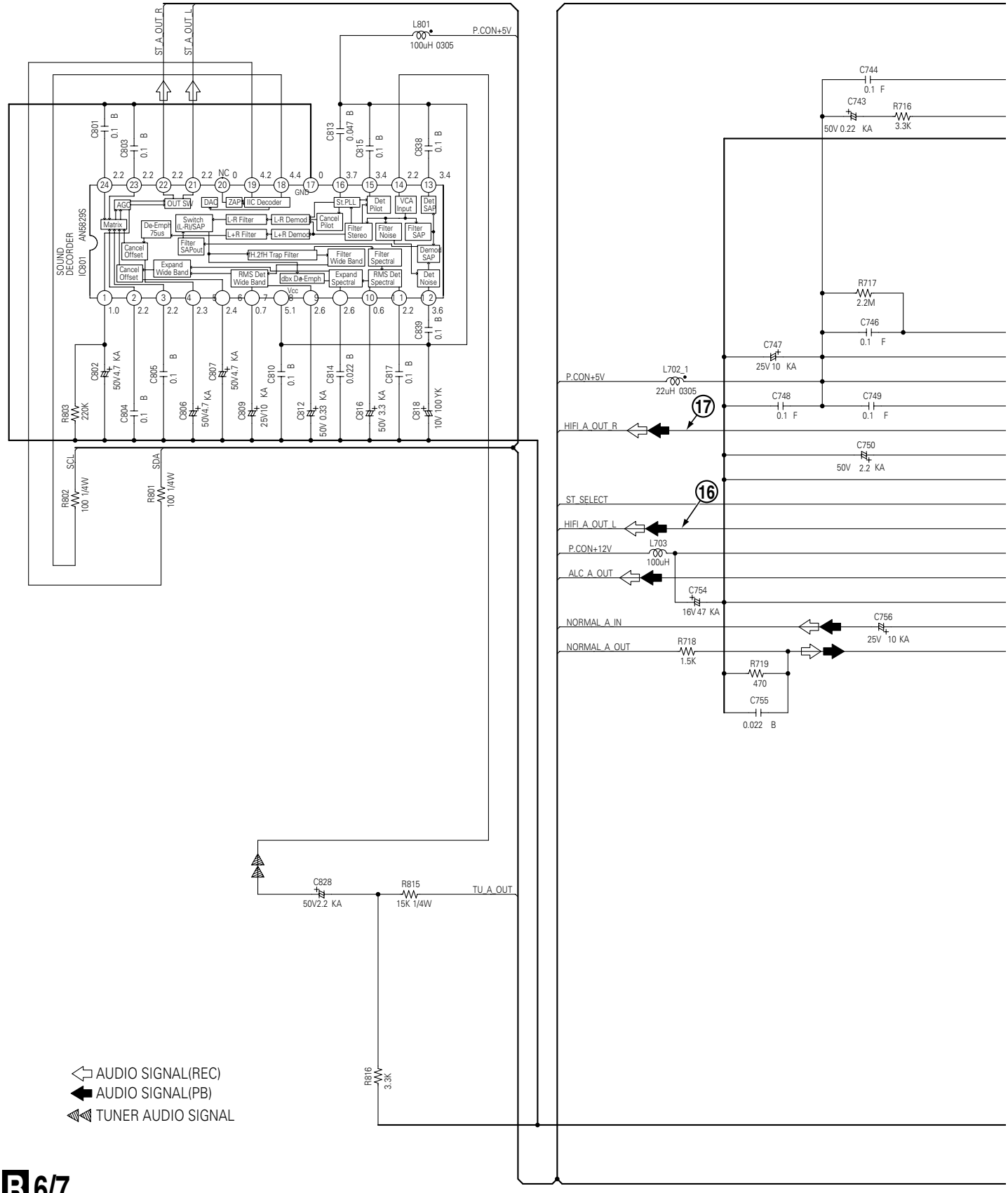

V651 HNV-09SS48
9G 8G 7G 6G 5G 4G 3G 2G 1G
PR FINE
VR C
SLP
CH
M
S
P M
HEATER DC-
HEATER DC+
FIP DRIVER
IC651
PT6315
SEGMENT DRIVER
GRID DRIVER
KEY SCAN OUTPUT
DIMMING CIRCUIT
DIPLAY MEMORY (12bits * 12Words)
TIMING GENERATOR
CONTROL
KEY MATRIX MEMORY
LED DRIVE
OSC
SERIAL DATA INTERFACE
-22V
C670 0.1 F
TP651 005P-2100
C665 0.1 B
FROM/TO HI-FI/DEMODULATOR
FRONT_A_IN_R
FRONT_A_IN_L
B 6/7
FROM/TO AV SW
FRONT_A_IN_R
FRONT_A_IN_L
FRONT_V_IN
FRONT_Y_IN
FRONT_C_IN
B 7/7
FROM/TO SYSCON
KEY-A
KEY-B
REM_IN
FL_CS
FL_CLK
FL_DATA
FRONT_S_SW
B 2/7
OS651
PIC-37041LO-H
Vout
GND
B+
REM_IN
R671 150 1/4W
AT+5.2V
FROM/TO REGULATOR
P.CON+12V
AT+5.2V
-22V
HEATER_DC+
HEATER_DC-
GND
B 4/7
R667 82K
R669 10K
R670 10K
C677 0.1 B
C669 6.3V 47 KA
C672 6.3V 47 KA
C673 0.01 B
VCR LED(GREEN) D652_1
LTL-1CHGE-002A
R666 330
AT+5.2V
FL_DATA
FL_CLK
FL_CS
KEY-B
R651 2.7K
R652 1.8K
R653 1.5K
EJECT SW651
POWER SW652
DVD/VCR SW653
EVQ21505R
RECORD LUMINANCE SIGNAL
RECORD COLOR SIGNAL
AUDIO SIGNAL(REC)

B 5/7

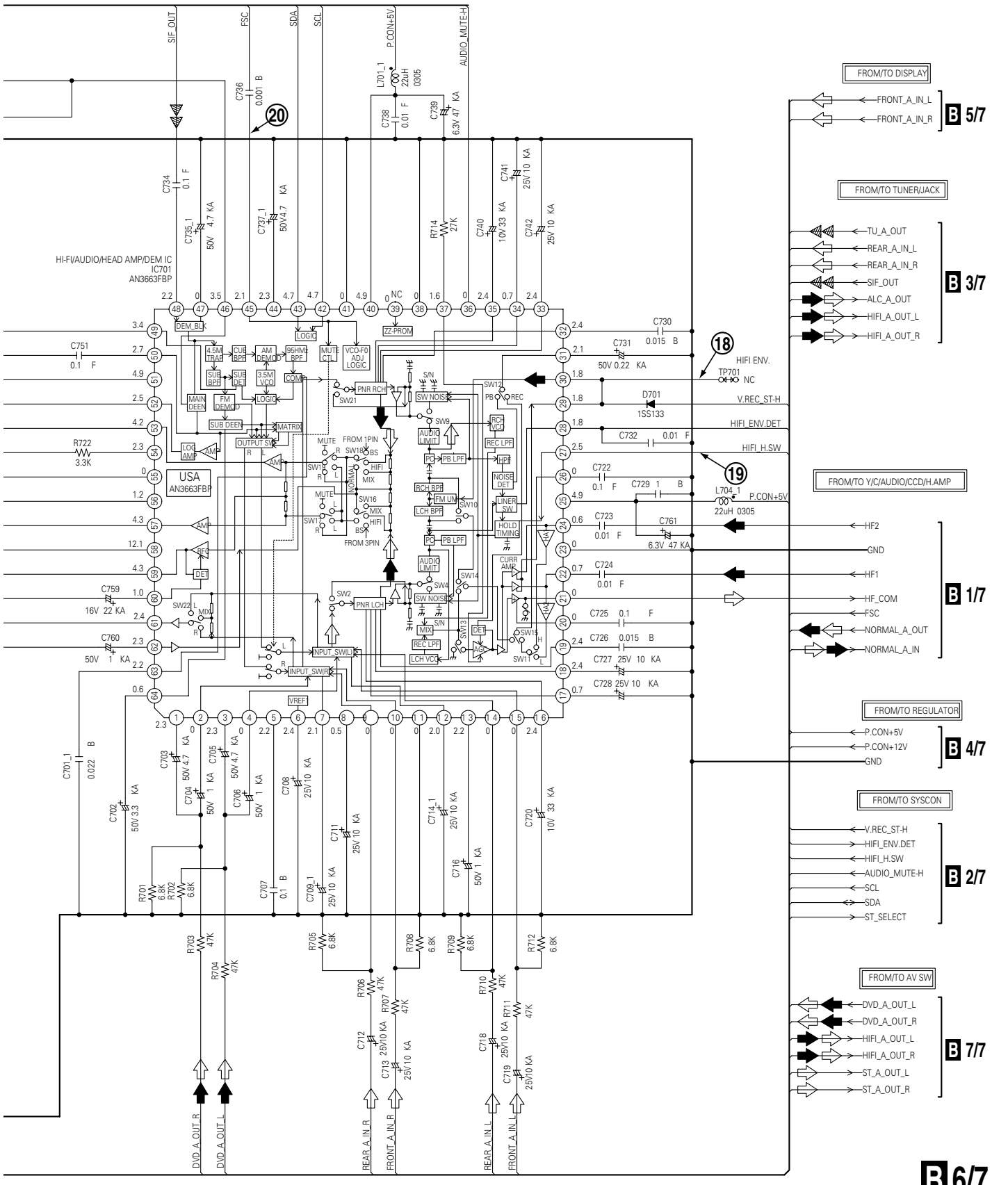
3.14 VCR MT PCB ASSY(6/7)

B 6/7 VCR MT PCB ASSY (A2D309A010)

- **Hi-Fi/DEMODULATOR BLOCK**



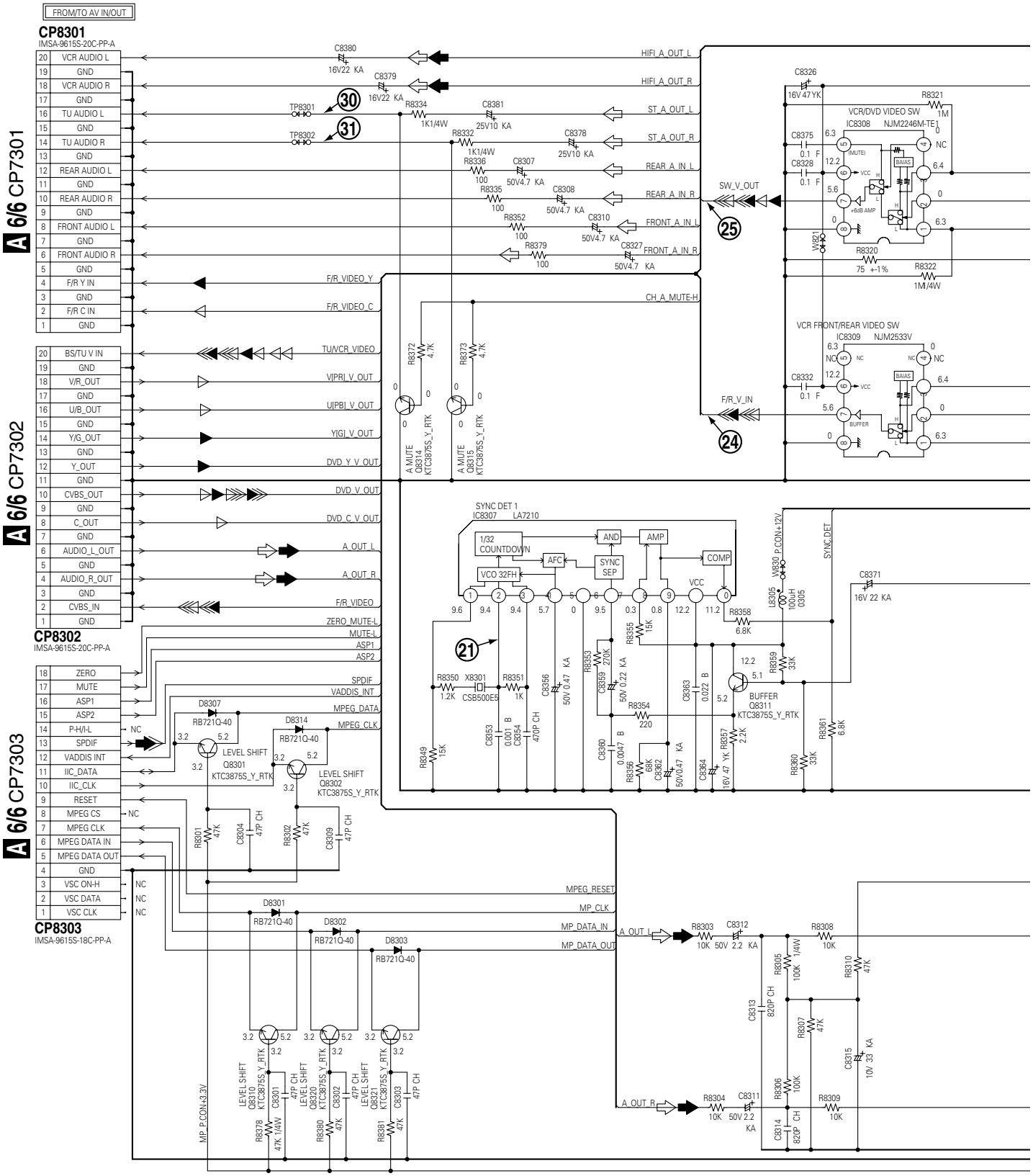
B 6/7


HI-FI/AUDIO/HEAD AMP/DEM IC
IC701
AN3663FBP
USA
AN3663FBP
SIF_OUT
FSC
SDA
SCL
P.CON+5V
AUDIO_MUTE-H
FROM/TO DISPLAY
FRONT_A_IN_L
FRONT_A_IN_R
B 5/7
FROM/TO TUNER/JACK
TU_A_OUT
REAR_A_IN_L
REAR_A_IN_R
SIF_OUT
ALC_A_OUT
HIFI_A_OUT_L
HIFI_A_OUT_R
B 3/7
HIFI ENV.
TP701
NC
V.REC_ST-H
HIFI_ENV.DET
HIFI_H.SW
FROM/TO Y/C/AUDIO/CCD/H.AMP
HF2
GND
HF1
HF_COM
FSC
NORMAL_A_OUT
NORMAL_A_IN
B 1/7
FROM/TO REGULATOR
P.CON+5V
P.CON+12V
GND
B 4/7
FROM/TO SYSCON
V.REC_ST-H
HIFI_ENV.DET
HIFI_H.SW
AUDIO_MUTE-H
SCL
SDA
ST_SELECT
B 2/7
FROM/TO AV SW
DVD_A_OUT_L
DVD_A_OUT_R
HIFI_A_OUT_L
HIFI_A_OUT_R
ST_A_OUT_L
ST_A_OUT_R
B 7/7
DVD_A_OUT_R
DVD_A_OUT_L
REAR_A_IN_R
FRONT_A_IN_R
REAR_A_IN_L
FRONT_A_IN_L
B 6/7

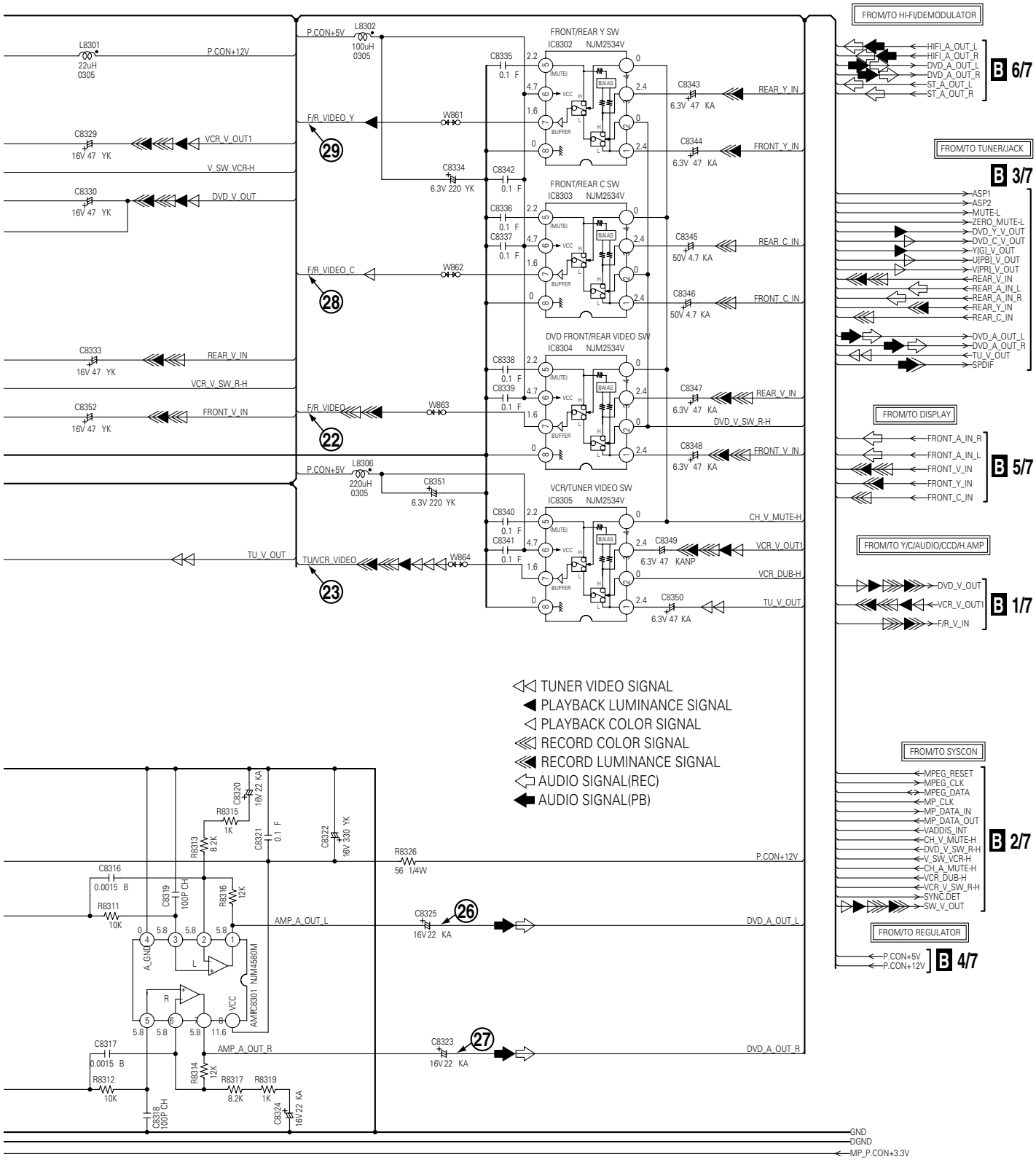
3.15 VCR MT PCB ASSY(7/7)

B 7/7 VCR MT PCB ASSY (A2D309A010)

- **AV SW BLOCK**



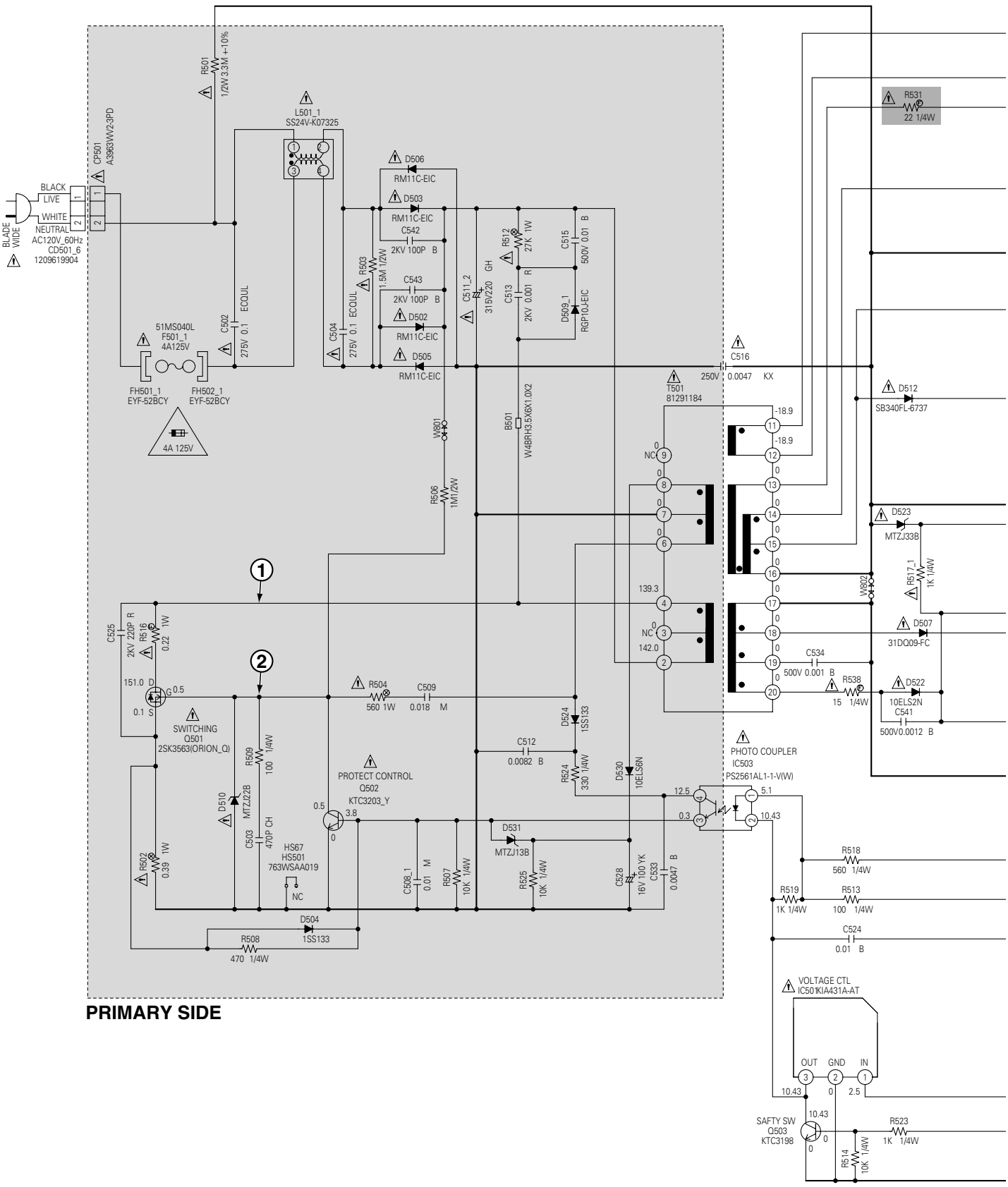
B 7/7


FROM/TO HI-FI/DEMODULATOR
HIFI_A_OUT_L
HIFI_A_OUT_R
DVD_A_OUT_L
DVD_A_OUT_R
ST_A_OUT_L
ST_A_OUT_R
B 6/7
FROM/TO TUNER/JACK
B 3/7
ASP1
ASP2
MUTE-L
ZERO_MUTE-L
DVD_Y_V_OUT
DVD_C_V_OUT
Y[G]_V_OUT
U[PB]_V_OUT
V[PR]_V_OUT
REAR_V_IN
REAR_A_IN_L
REAR_A_IN_R
REAR_Y_IN
REAR_C_IN
DVD_A_OUT_L
DVD_A_OUT_R
TU_V_OUT
SPDIF
FROM/TO DISPLAY
FRONT_A_IN_R
FRONT_A_IN_L
FRONT_V_IN
FRONT_Y_IN
FRONT_C_IN
B 5/7
FROM/TO Y/C/AUDIO/CCD/H.AMP
DVD_V_OUT
VCR_V_OUT1
F/R_V_IN
B 1/7
FROM/TO SYSCON
MPEG_RESET
MPEG_CLK
MPEG_DATA
MP_CLK
MP_DATA_IN
MP_DATA_OUT
VADDIS_INT
CH_V_MUTE-H
DVD_V_SW_R-H
V_SW_VCR-H
CH_A_MUTE-H
VCR_DUB-H
VCR_V_SW_R-H
SYNC_DET
SW_V_OUT
B 2/7
FROM/TO REGULATOR
P.CON+5V
P.CON+12V
B 4/7
P.CON+12V
L8301 22uH 0305
C8329 16V 47 YK
VCR_V_OUT1
V_SW_VCR-H
C8330 16V 47 YK
DVD_V_OUT
C8333 16V 47 YK
REAR_V_IN
VCR_V_SW_R-H
C8352 16V 47 YK
FRONT_V_IN
TU_V_OUT
P.CON+5V
L8302 100uH 0305
L8306 220uH 0305
C8351 6.3V 220 YK
F/R_VIDEO_Y
F/R_VIDEO_C
F/R_VIDEO
TU/VCR_VIDEO
W861
W862
W863
W864
C8334 6.3V 220 YK
29
28
22
23
FRONT/REAR Y SW
IC8302 NJM2534V
FRONT/REAR C SW
IC8303 NJM2534V
DVD FRONT/REAR VIDEO SW
IC8304 NJM2534V
VCR/TUNER VIDEO SW
IC8305 NJM2534V
C8335 0.1 F
C8342 0.1 F
C8336 0.1 F
C8337 0.1 F
C8338 0.1 F
C8339 0.1 F
C8340 0.1 F
C8341 0.1 F
C8343 6.3V 47 KA
C8344 6.3V 47 KA
C8345 50V 4.7 KA
C8346 50V 4.7 KA
C8347 6.3V 47 KA
C8348 6.3V 47 KA
C8349 6.3V 47 KANP
C8350 6.3V 47 KA
REAR_Y_IN
FRONT_Y_IN
REAR_C_IN
FRONT_C_IN
REAR_V_IN
FRONT_V_IN
CH_V_MUTE-H
VCR_V_OUT1
VCR_DUB-H
TU_V_OUT
DVD_V_SW_R-H
TUNER VIDEO SIGNAL
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)
C8320 16V 22 KA
R8315 1K
R8313 8.2K
C8321 0.1 F
C8322 16V 330 YK
R8326 56 1/4W
C8316 0.0015 B
C8319 100P CH
R8316 12K
R8311 10K
AMP_A_OUT_L
C8325 16V 22 KA
26
DVD_A_OUT_L
A_GND
NJM4580M
AMP_A_OUT_R
C8323 16V 22 KA
27
DVD_A_OUT_R
C8317 0.0015 B
R8312 10K
R8314 12K
R8317 8.2K
R8319 1K
C8318 100P CH
C8324 16V 22 KA
GND
DGND
MP_P.CON+3.3V

B 7/7

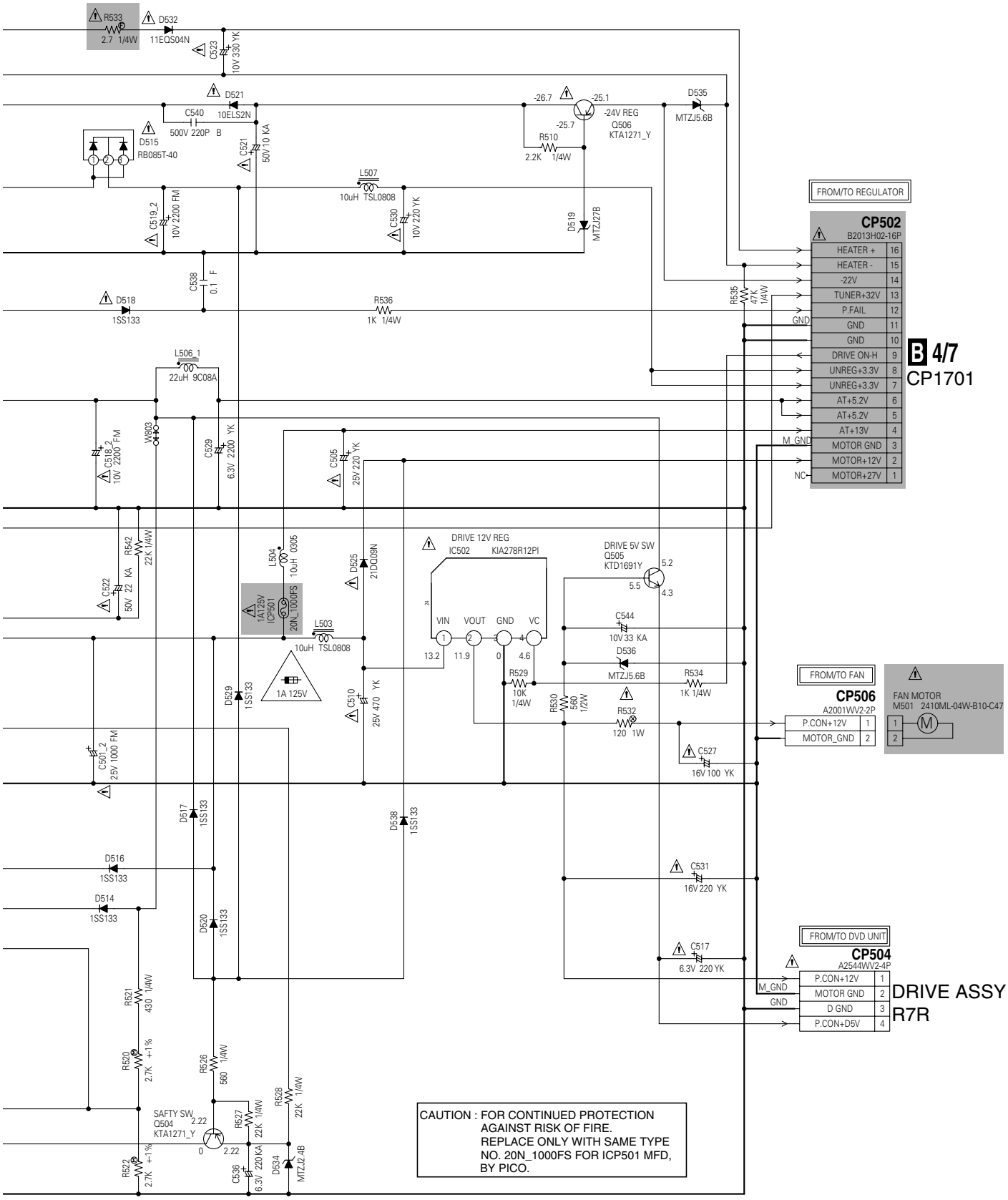
3.16 POWER PCB ASSY

C POWER PCB ASSY (A2D309A240)



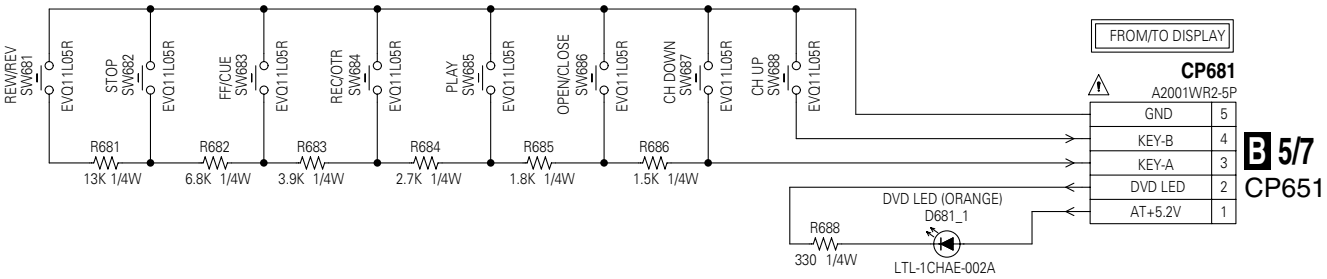
PRIMARY SIDE

* The parts except ▒ mark cannot be changed. On that occasion, replace whole Assy.



3.17 OPEARTION PCB ASSY

D OPERATION PCB ASSY (A2D309A270)



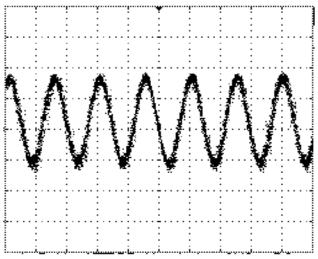
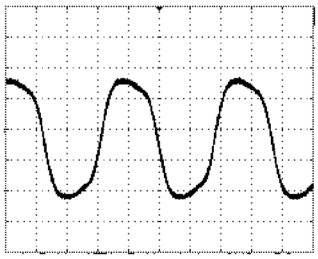
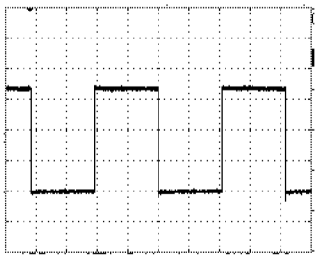
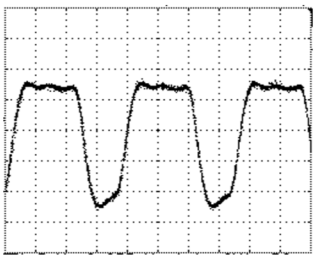
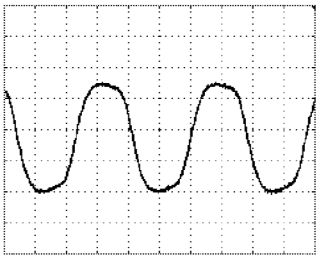
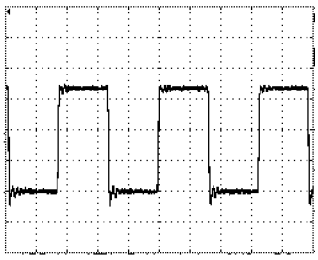
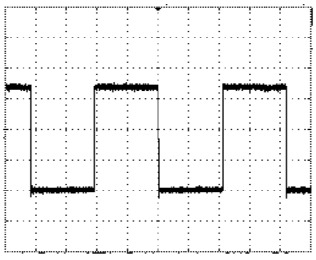
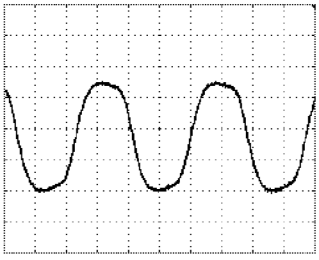
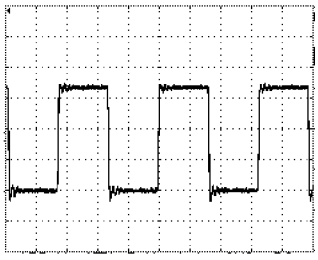
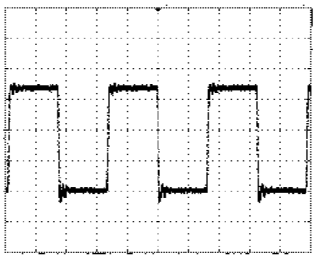
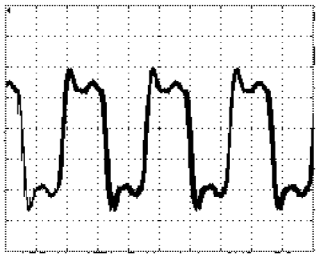
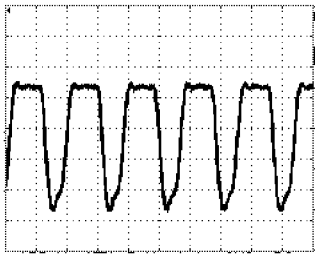
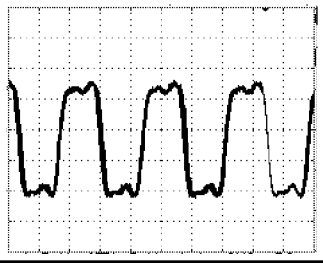
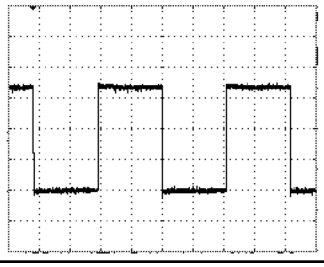
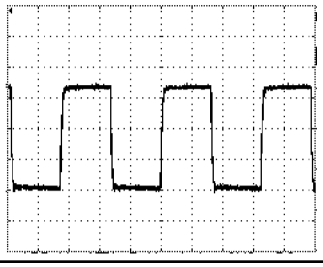
SWITCHES

SW681	REW/RWV
SW682	STOP
SW683	FF/CUE
SW684	REC/OTR
SW685	PLAY
SW686	OPEN/CLOSE
SW687	CH DOWN
SW688	CH UP

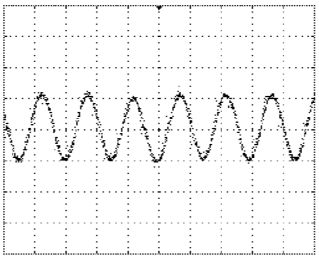
3.18 WAVE FORMS

Note: The encircled numbers denote measuring point in the schematic diagram.

A DVD/HD MPEG PCB ASSY

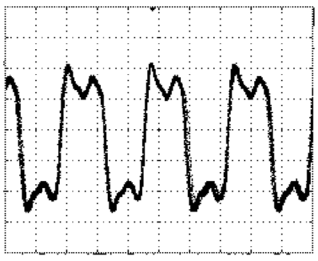
① **IC4008-pin 38 (MCLK)** V: 500mV/div. H: 5nsec/div. 	⑥ **IC4009-pin 147 (27MHz_OSC)** V: 1.0V/div. H: 10nsec/div. 	⑪ **IC4001-pin 109 (ALRCLKO)** V: 1.0V/div. H: 5µsec/div. 
② **IC4009-pin 189 (SBCLK)** V: 1.0V/div. H: 10nsec/div. 	⑦ **IC4001-pin 21 (ATDMARQ)** V: 1.0V/div. H: 10nsec/div. 	⑫ **IC4001-pin 110 (I55_ABCLK)** V: 1.0V/div. H: 100nsec/div. 
③ **IC4009-pin 182 (ALRCLK)** V: 1.0V/div. H: 5µsec/div. 	⑧ **IC4001-pin 35 (GCLKA)** V: 1.0V/div. H: 10nsec/div. 	⑬ **IC4001-pin 119 (ABCLKO)** V: 1.0V/div. H: 100nsec/div. 
④ **IC4009-pin 181 (I55_ABCLK)** V: 1.0V/div. H: 100nsec/div. 	⑨ **IC4001-pin 99 (VADDIS_AMCLK)** V: 1.0V/div. H: 20nsec/div. 	⑭ **IC4001-pin 142 (SBCLK)** V: 1.0V/div. H: 20nsec/div. 
⑤ **IC4009-pin 177 (I55_AMCLK)** V: 1.0V/div. H: 20nsec/div. 	⑩ **IC4001-pin 100 (I55_ALRCK)** V: 1.0V/div. H: 5µsec/div. 	⑮ **IC4001-pin 144 (SPDIF)** V: 1.0V/div. H: 200nsec/div. 

16 **IC4005-pin 38 (PCLK)**
V: 500mV/div. H: 5nsec/div.

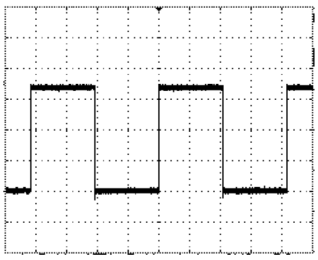


17 **IC7301-pin 4 (ABCLKO)**
V: 1.0V/div. H: 100nsec/div.

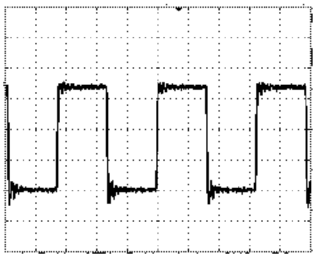
18 **IC7301-pin 5 (VADDIS_AMCLK)**
V: 1.0V/div. H: 20nsec/div.



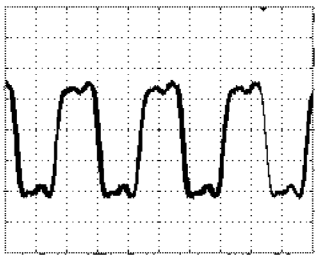
19 **IC7301-pin 7 (ALRCLKO)**
V: 1.0V/div. H: 5µsec/div.



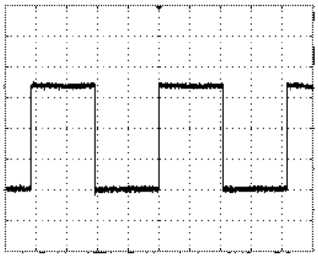
20 **IC7301-pin 10 (I55_ABCLK)**
V: 1.0V/div. H: 100nsec/div.



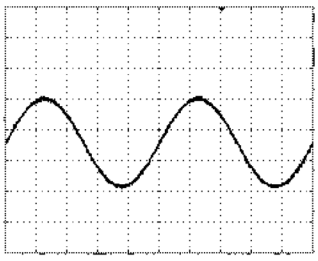
21 **IC7301-pin 11 (I55_AMCLK)**
V: 1.0V/div. H: 20nsec/div.



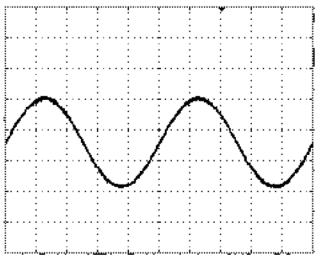
22 **IC7301-pin 13 (I55_ALRCLK)**
V: 1.0V/div. H: 5µsec/div.



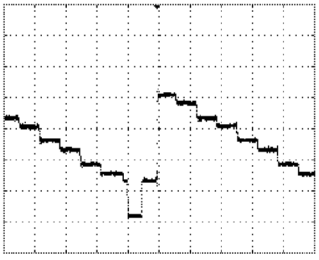
23 **IC7301-pin 27 (DAC_R)**
V: 1.0V/div. H: 200µsec/div.



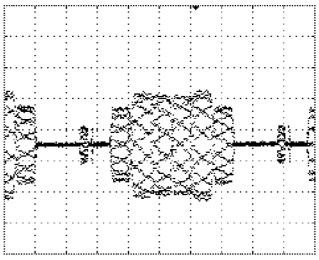
24 **IC7301-pin 26 (DAC_L)**
V: 1.0V/div. H: 200µsec/div.



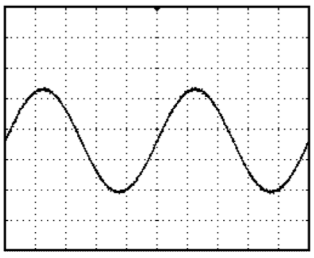
25 **CP7302-pin 9 (Y_OUT)**
V: 500mV/div. H: 10µsec/div.



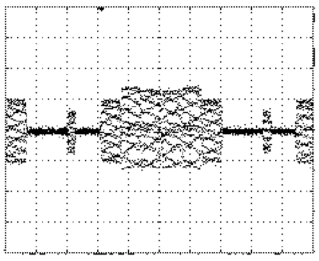
26 **CP7302-pin 13 (C_OUT)**
V: 500mV/div. H: 10µsec/div.



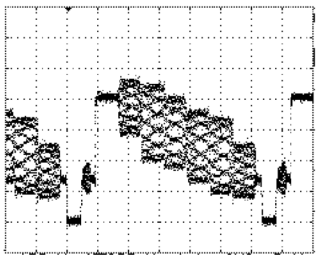
27 **CP7301-pin 17 (Y_VIDEO_IN)**
V: 200mV/div. H: 10µsec/div.



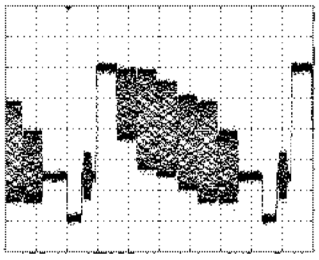
28 **CP7301-pin 19 (C_VIDEO_IN)**
V: 200mV/div. H: 10µsec/div.



29 **IC7302-pin 6 (TU_VIDEO)**
V: 200mV/div. H: 10µsec/div.

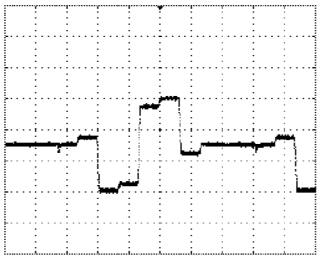


30 **IC7302-pin 4 (COMPOSITE_IN)**
V: 200mV/div. H: 10µsec/div. EE

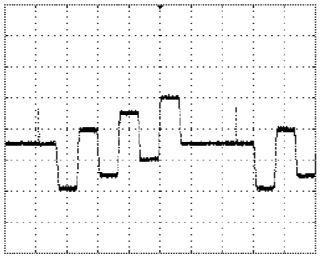


B VCR MT PCB ASSY

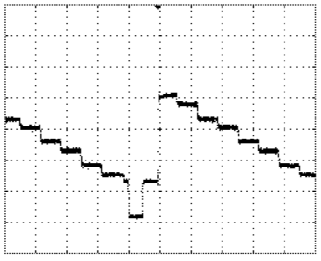
31 CP7302-pin 3 (V/R_OUT)
V: 500mV/div. H: 10µsec/div.



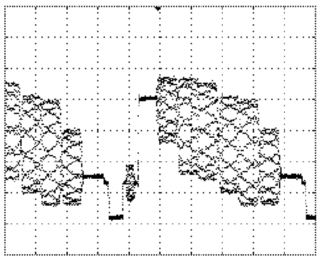
32 CP7302-pin 5 (U/B_OUT)
V: 500mV/div. H: 10µsec/div.



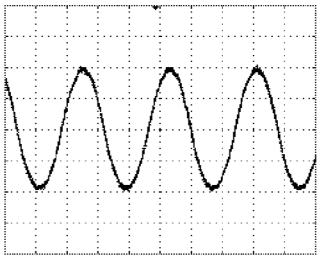
33 CP7302-pin 7 (Y/G_OUT)
V: 500mV/div. H: 10µsec/div.



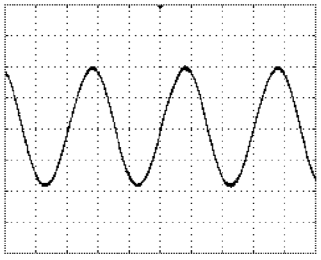
34 CP7302-pin 11 (CVBS_OUT)
V: 500mV/div. H: 10µsec/div.



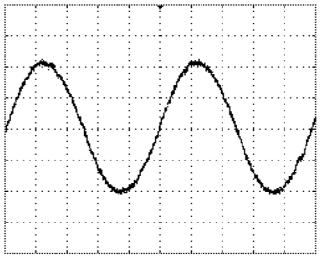
1 IC101-pin 49 (Xtal) VCR PLAY
V: 100mV/div. H: 100nsec/div.



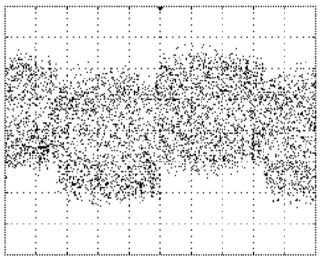
2 CP102-pin 2 (AE HEAD +) VCR REC
V: 20V/div. H: 5µsec/div.



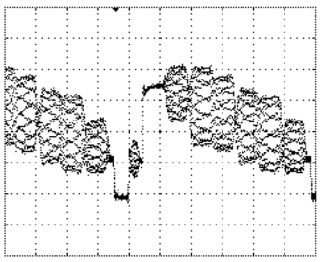
3 IC101-pin 10 (NORMAL_A_OUT)
VCR PLAY
V: 20mV/div. H: 200µsec/div.



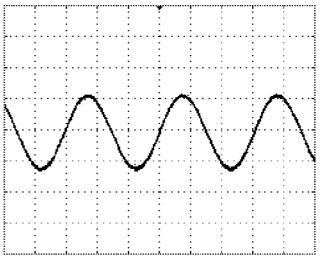
4 TP101 (V. ENV) VCR PLAY
V: 10mV/div. H: 5msec/div.



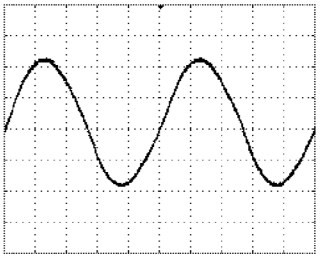
5 IC101-pin 26 VCR PLAY
V: 500mV/div. H: 10µsec/div.



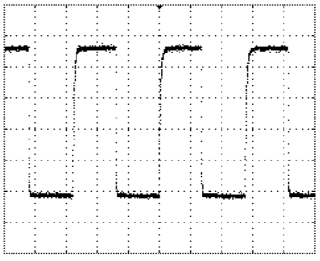
6 IC3001-pin 76 (X1) VCR PLAY
V: 500mV/div. H: 10µsec/div.



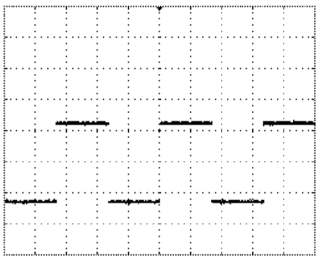
7 IC3001-pin 80 (OSC2) VCR PLAY
V: 1.0V/div. H: 20nsec/div.



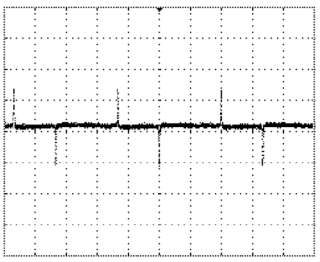
8 IC3001-pin 104 (D_FG/PG) VCR PLAY
V: 500mV/div. H: 500µsec/div.



9 IC3001-pin 105 (H. SW) VCR PLAY
V: 2.0V/div. H: 10msec/div.

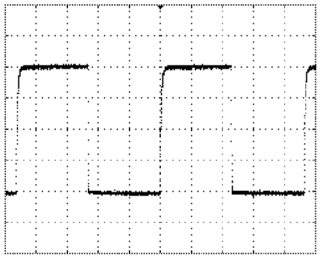


10 IC3001-pin 8 (CTL_SMT(I)) VCR PLAY
V: 1.0V/div. H: 10msec/div.

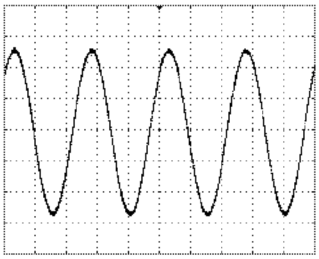


A

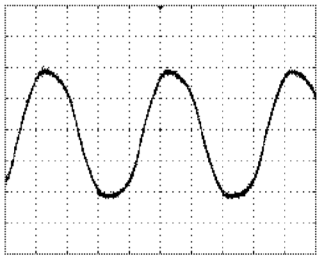
(11) IC3001-pin 9 (CAP_FG) VCR PLAY
V: 1.0V/div. H: 200µsec/div.



(16) IC701-pin 57 (HIFI_A_OUT_L)
VCR PLAY
V: 200mV/div. H: 1msec/div.

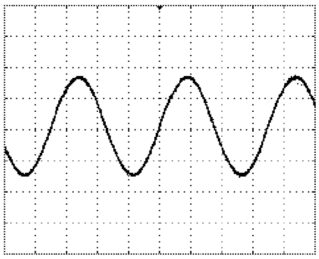


(21) IC8307-pin 2 (Xtal) VCR PLAY
V: 100mV/div. H: 500nsec/div.

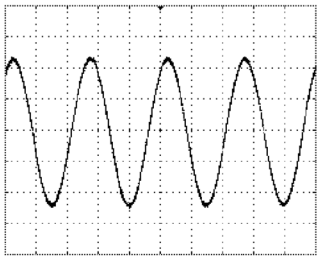


B

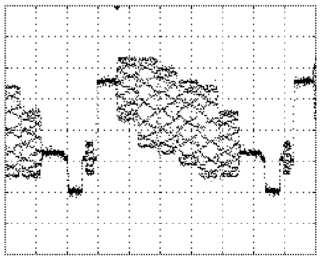
(12) IC3001-pin 22 (4FSCIN/2FSCIN)
VCR PLAY
V: 1.0V/div. H: 20nsec/div.



(17) IC701-pin 53 (HIFI_A_OUT_R)
VCR PLAY
V: 200mV/div. H: 1msec/div.

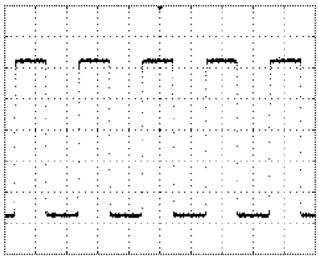


(22) IC8304-pin 7 (F/R_VIDEO) VIDEO IN
V: 200mV/div. H: 10µsec/div.

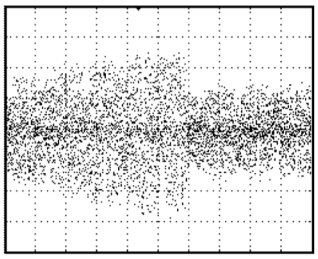


C

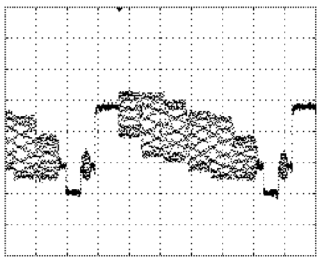
(13) Q3002-pin 3 (REEL_T) VCR PLAY
V: 1.0V/div. H: 500msec/div.



(18) IC701-pin 30 (HIFI_ENV.) VCR PLAY
V: 200mV/div. H: 2msec/div.

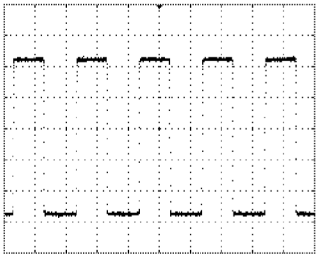


(23) IC8305-pin 7 (TU/VCR_VIDEO)
TUNER IN
V: 20mV/div. H: 10µsec/div.

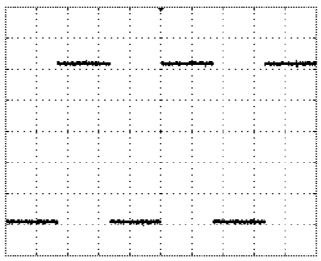


D

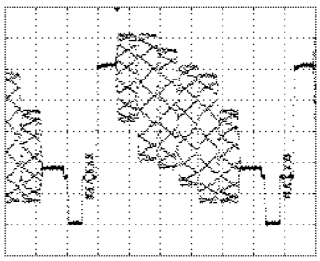
(14) Q3001-pin 3 (REEL_S) VCR PLAY
V: 1.0V/div. H: 500msec/div.



(19) IC701-pin 27 (HIFI_H. SW) VCR PLAY
V: 1.0V/div. H: 10msec/div.

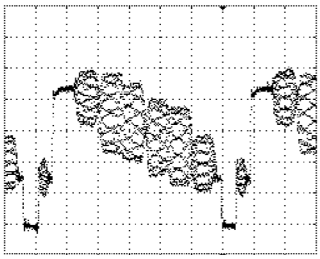


(24) IC8309-pin 7 (F/R_V_IN) VIDEO IN
V: 200mV/div. H: 10µsec/div.

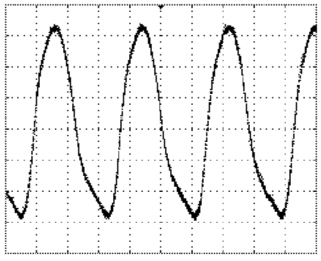


E

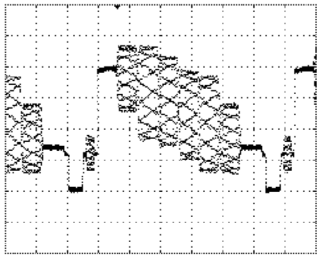
(15) J8005-pin 5 (V) VCR PLAY
V: 200mV/div. H: 10µsec/div.



(20) IC701-pin 45 (FSC) VCR PLAY
V: 200mV/div. H: 100nsec/div.



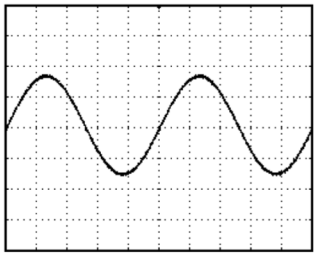
(25) IC8308-pin 7 (SW_V_OUT) VCR PLAY
V: 50mV/div. H: 10µsec/div.



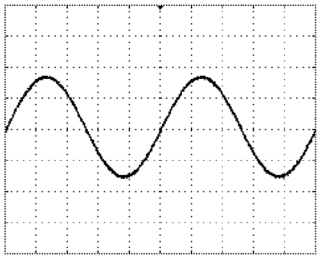
F

C POWER PCB ASSY

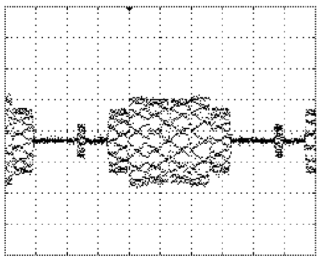
(26) IC8301-pin 1 (DVD_A_OUT_L)
DVD PLAY
V: 100mV/div. H: 200µsec/div.



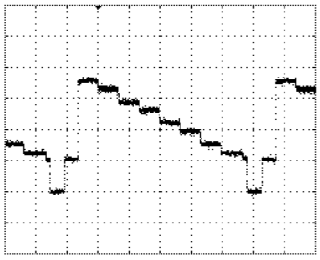
(27) IC8301-pin 8 (DVD_A_OUT_R)
DVD PLAY
V: 100mV/div. H: 200µsec/div.



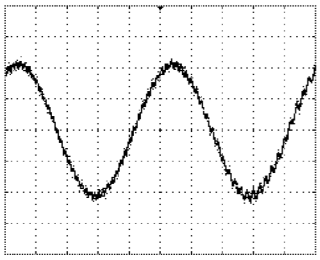
(28) IC8303-pin 7 (F/R_VIDEO_C) VIDEO IN
V: 20mV/div. H: 10µsec/div.



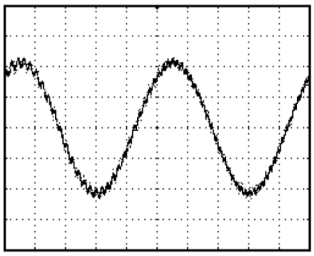
(29) IC8302-pin 7 (F/R_VIDEO_Y) VIDEO IN
V: 20mV/div. H: 10µsec/div.



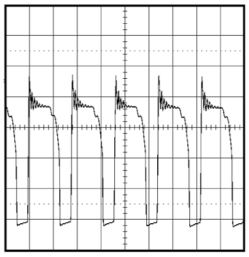
(30) CP8301-pin 16 (ST_A_OUT_L)
TUNER IN
V: 20mV/div. H: 200µsec/div.



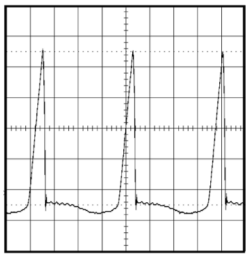
(31) CP8301-pin 14 (ST_A_OUT_R)
TUNER IN
V: 200mV/div. H: 200µsec/div.



(1) Foot of R516 DVD PLAY
V: 50V/div. H: 5µsec/div.



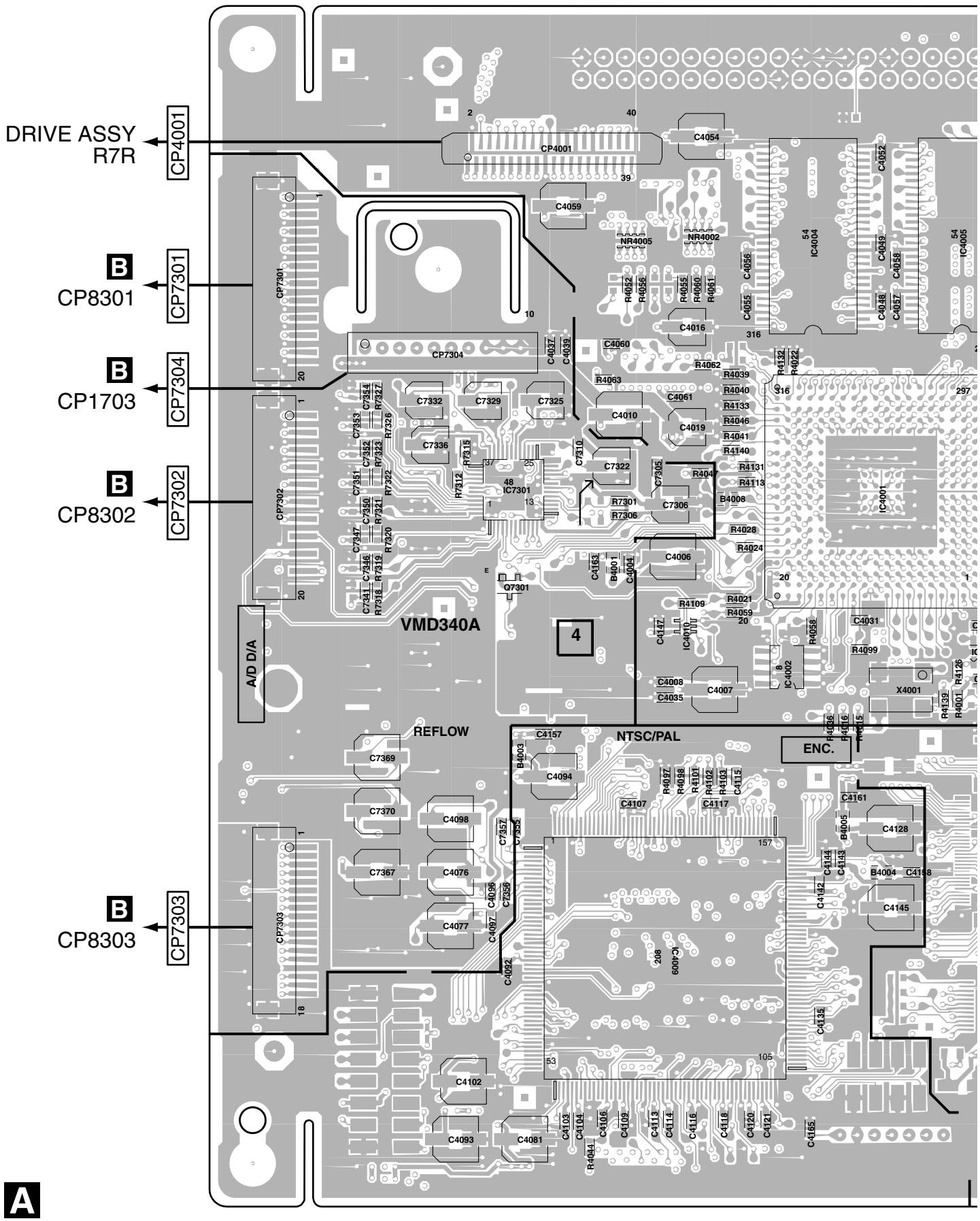
(2) Q501-Gate DVD PLAY
V: 1.0V/div. H: 1µsec/div.



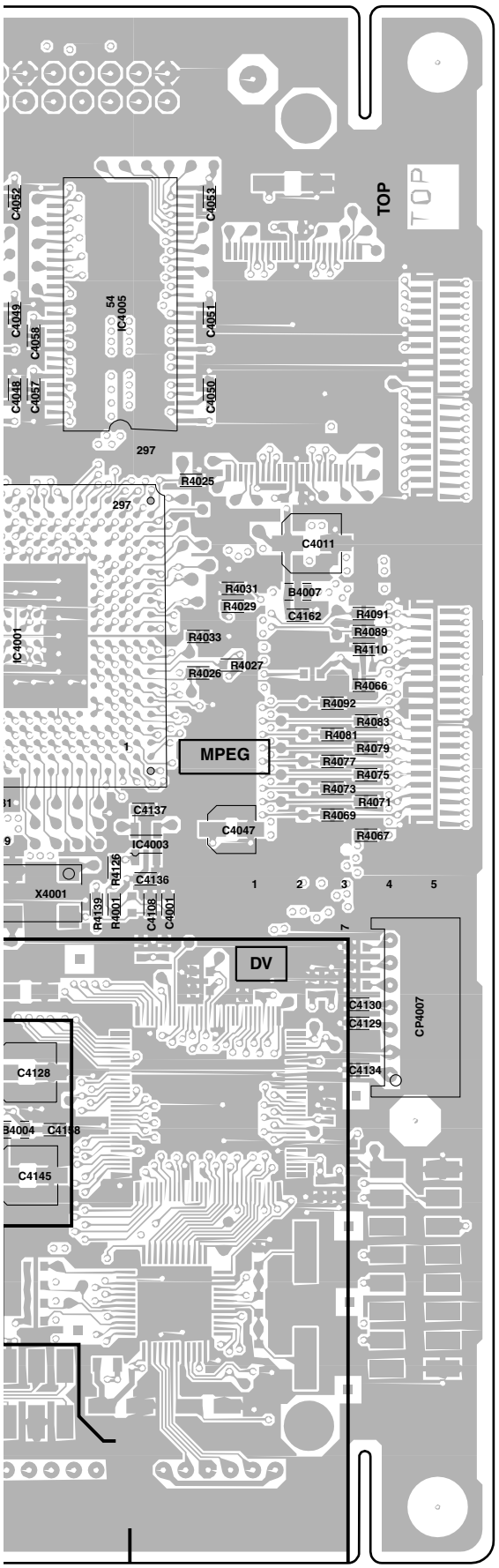
4. PCB CONNECTION DIAGRAM
4.1 DVD/HD MPEG PCB ASSY

SIDE A

A DVD/HD MPEG PCB ASSY



SIDE A



CP4007

IC4004 IC4005

IC7301 IC4001

Q7301

IC4003

IC4002

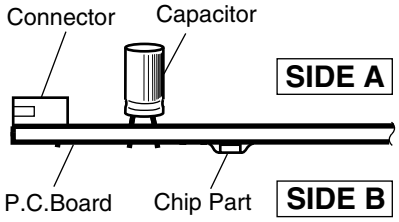
IC4009

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

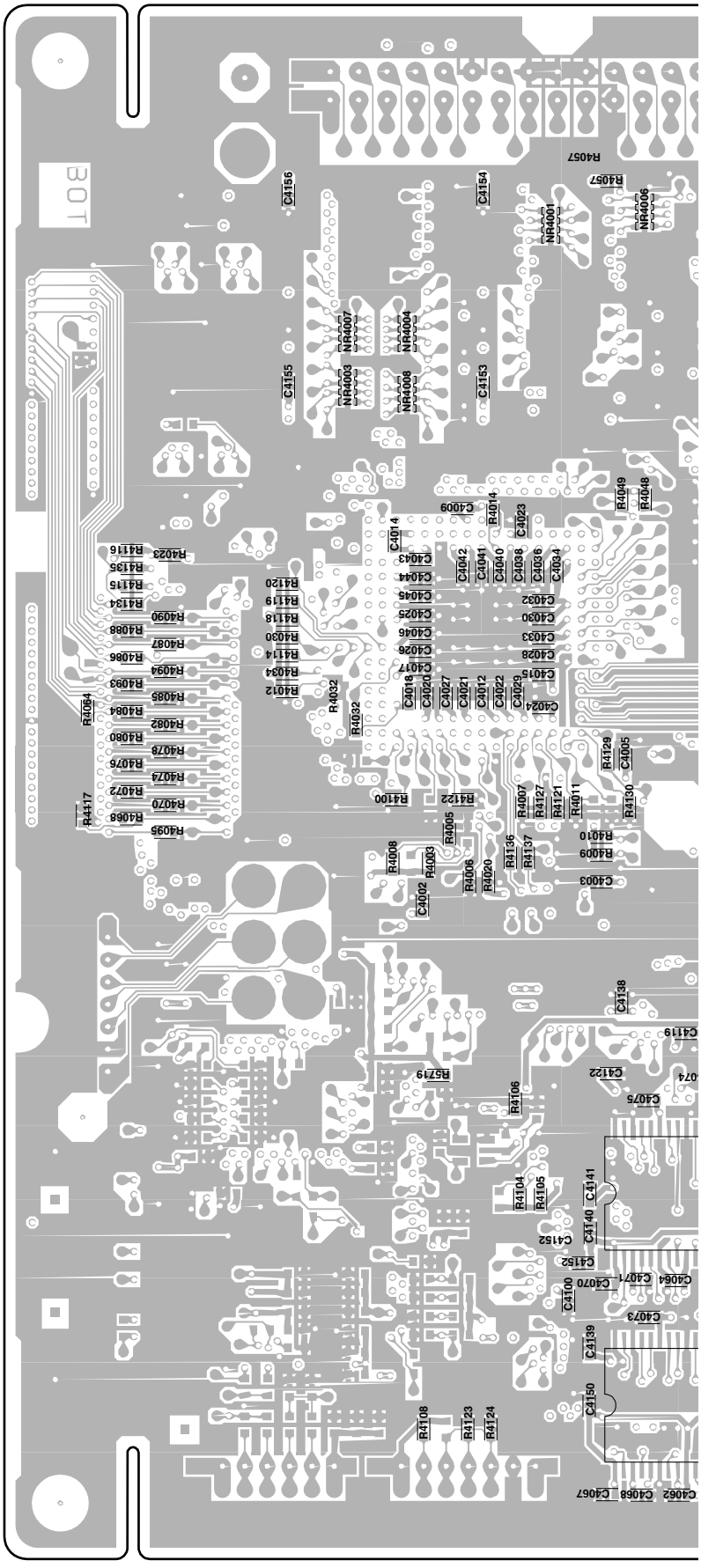
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.

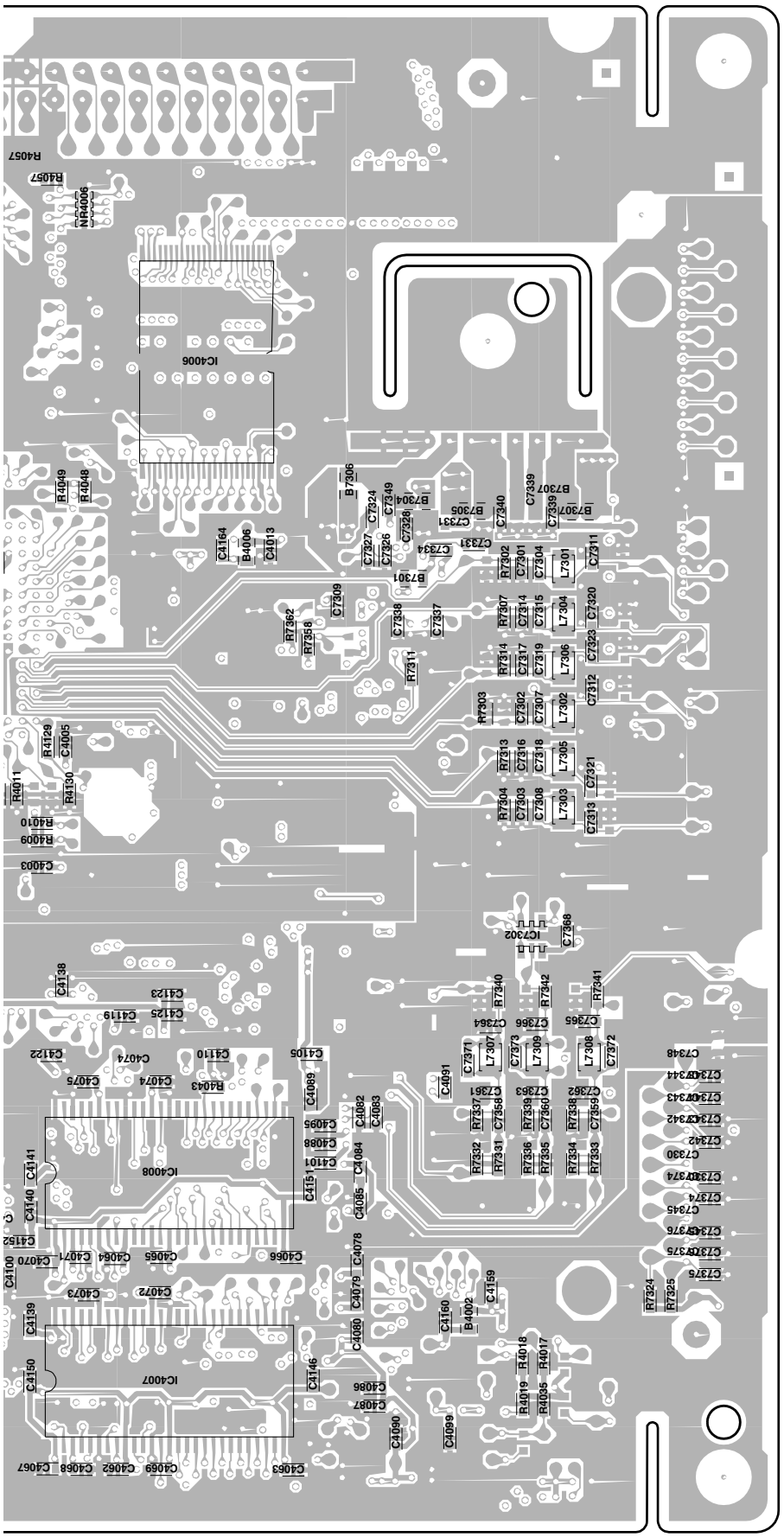


SIDE B

A DVD/HD MPEG PCB ASSY



SIDE B



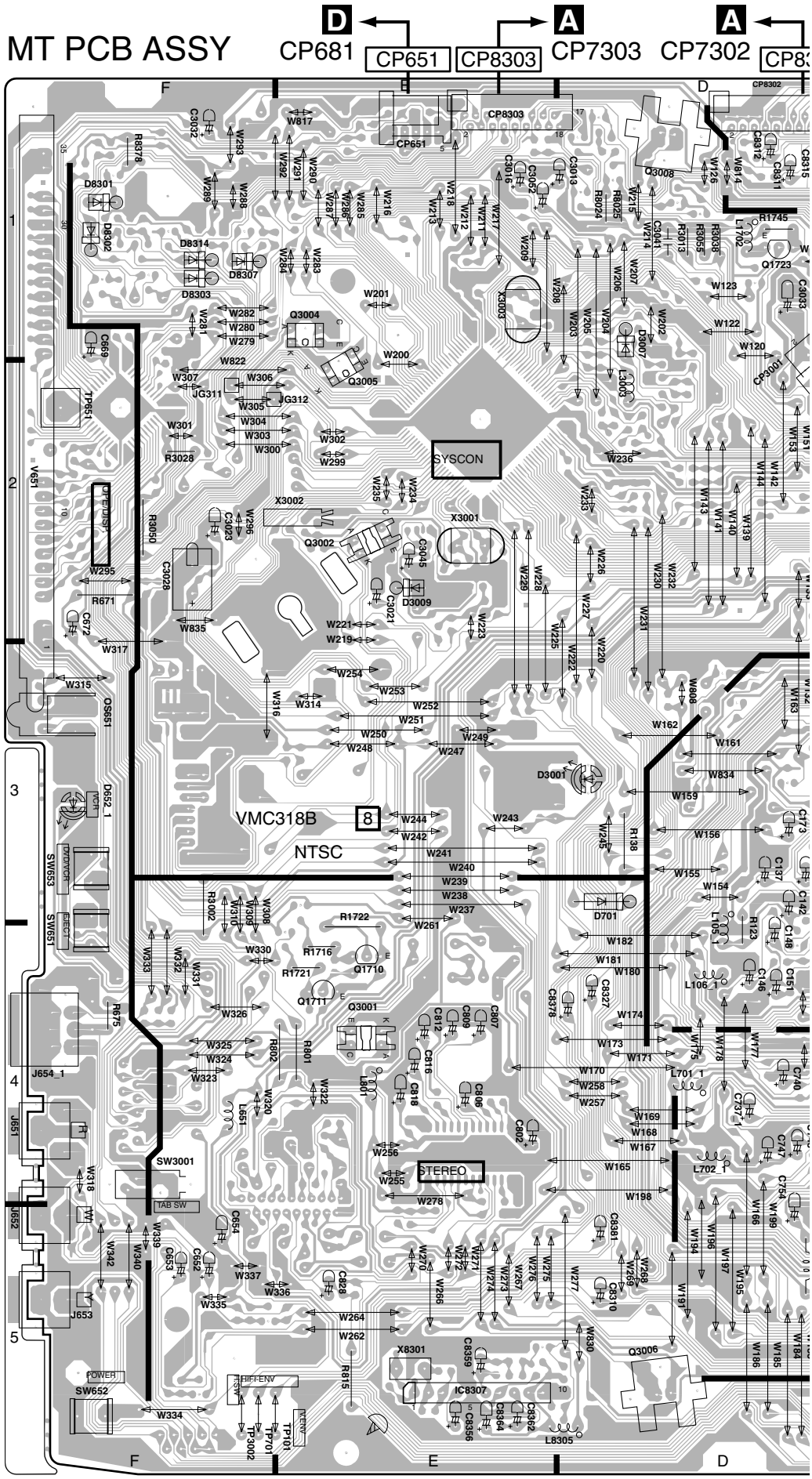
A B C D E F

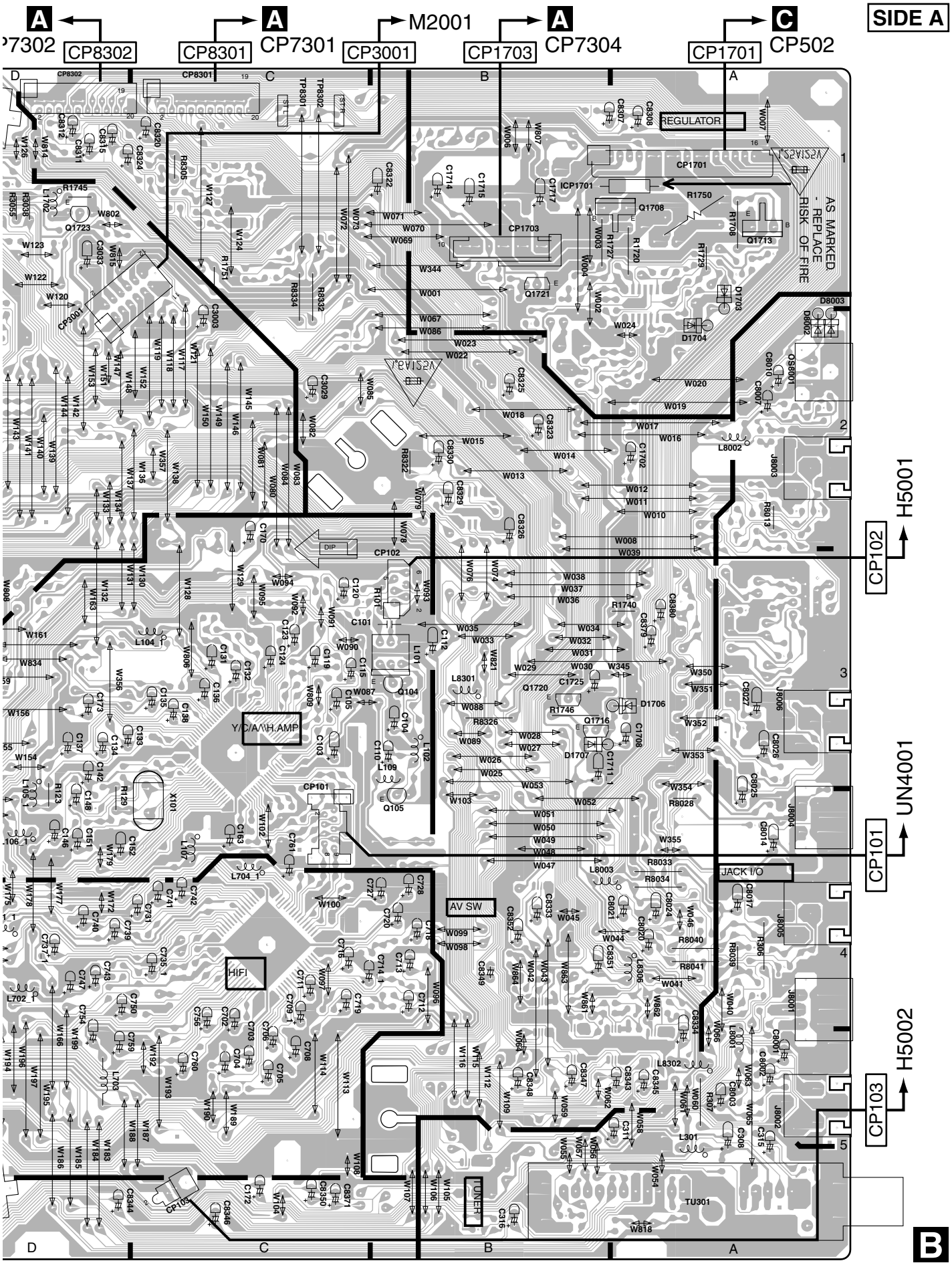
A

4.2 VCR MT PCB ASSY

SIDE A • **Parts mounted view**

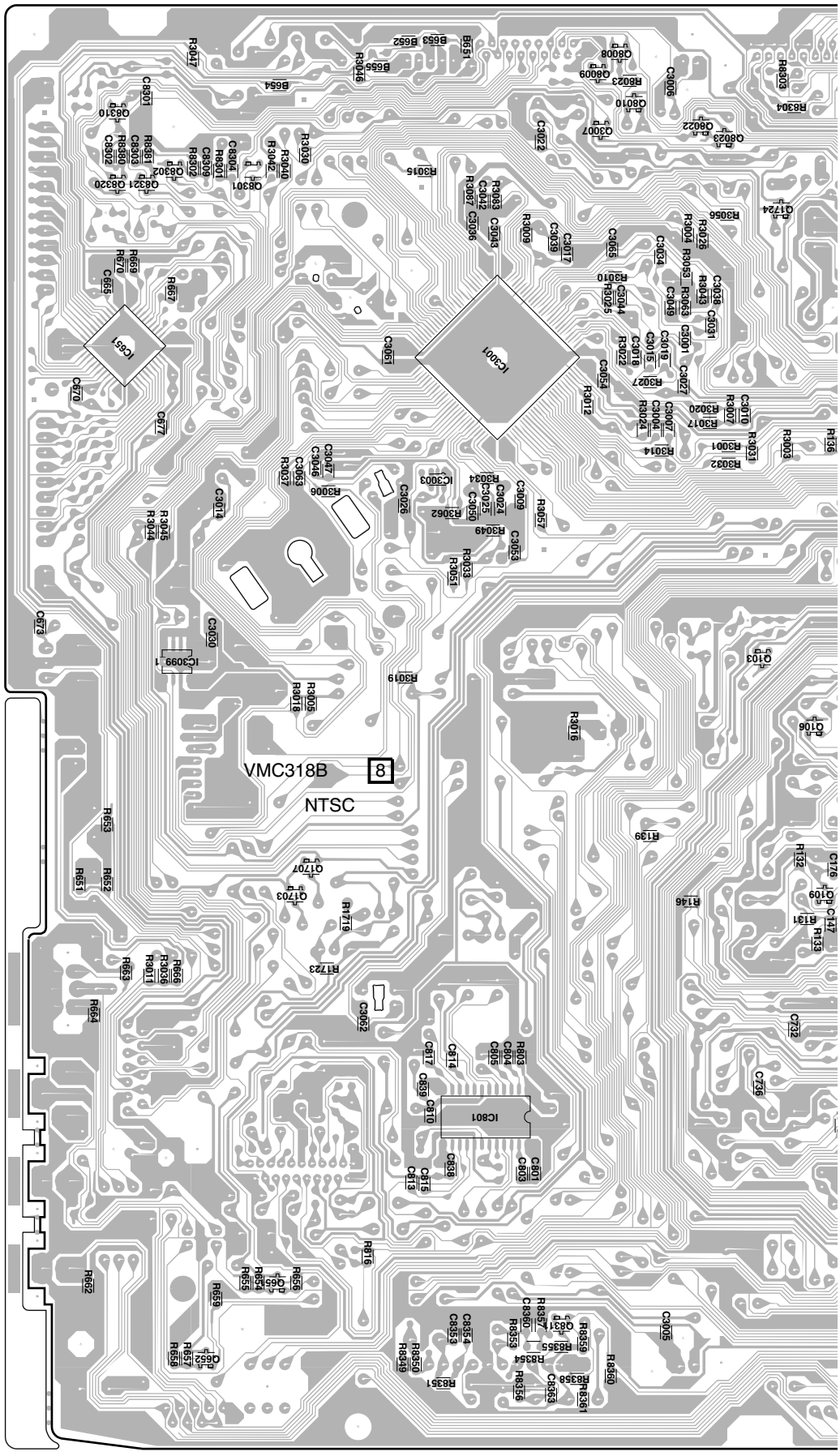
B VCR MT PCB ASSY




SIDE A
A
CP7302
CP8302
CP8301
A
CP7301
M2001
CP3001
CP1703
A
CP7304
CP1701
C
CP502
REGULATOR
AS MARKED
REPLACE
RISK OF FIRE
CP102
H5001
UN4001
CP101
JACK I/O
CP103
H5002
Y/C/A\H.AMP
AV SW
HIFI
TUNER
DIP
B
DVR-RT500-S
71

SIDE A • **Chip-parts mounted view**

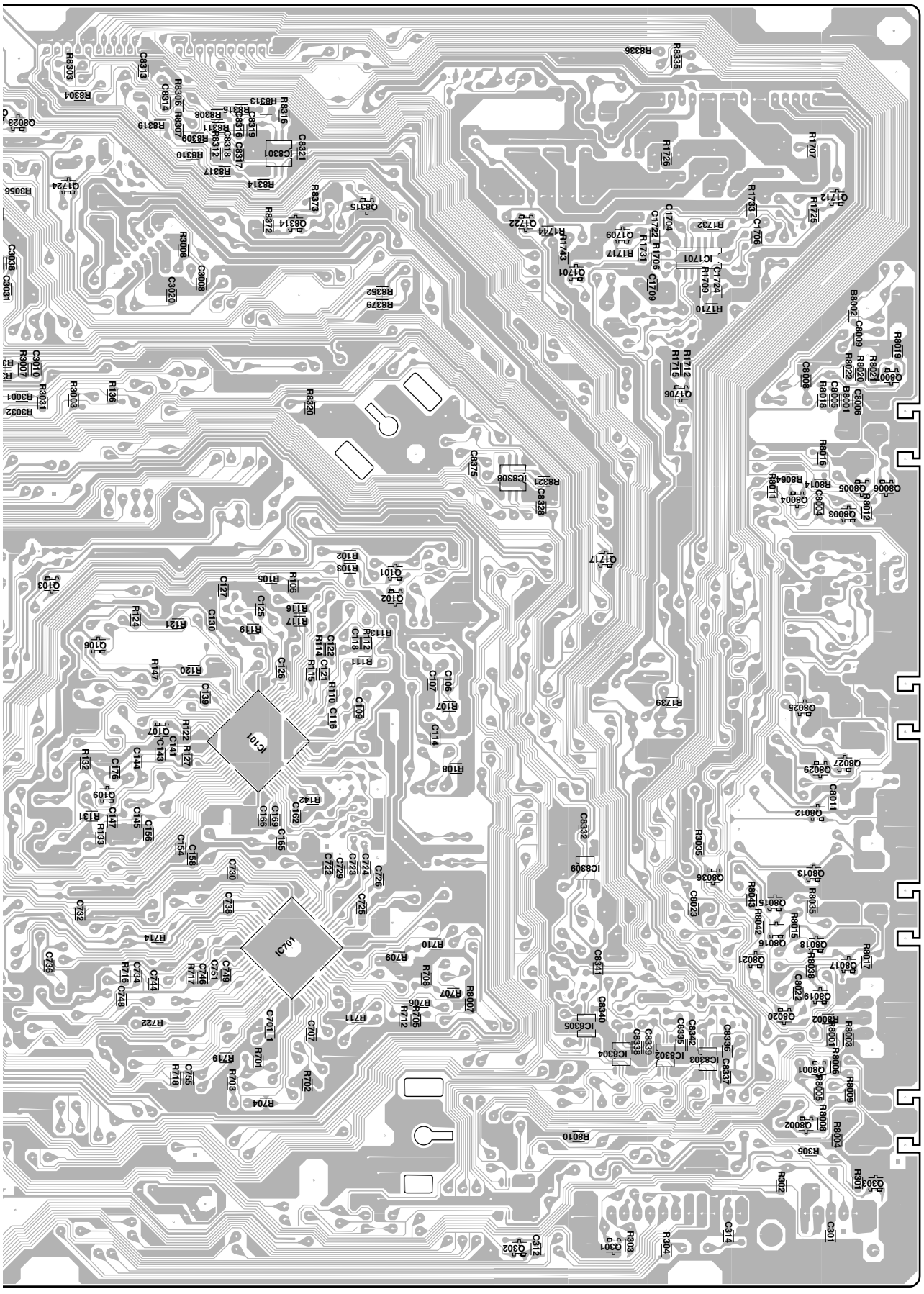
B VCR MT PCB ASSY



Q8008
Q8009
Q8010
Q3007 Q8022
Q8023
Q8302 Q8301 IC8301
Q8321
Q8320 Q1724
Q1712
Q8315
Q8314 Q1722
Q1709
IC1701
IC651
IC3001
Q8007
Q1706
IC3003
IC8308
Q8003-Q8006
Q1717
Q103 Q101
IC3099 Q102
Q8025
IC101
Q8027
Q1707 Q8029
Q1703
Q8012
IC8309 Q8013
Q8036
Q8015
Q8016
IC701 Q8018
Q8021
Q8017
IC801 Q8019
Q8020
IC8302-IC8305
Q8001
Q8002
Q651
Q8311 Q303
Q652
Q301
Q302

SIDE A

A B C D E F

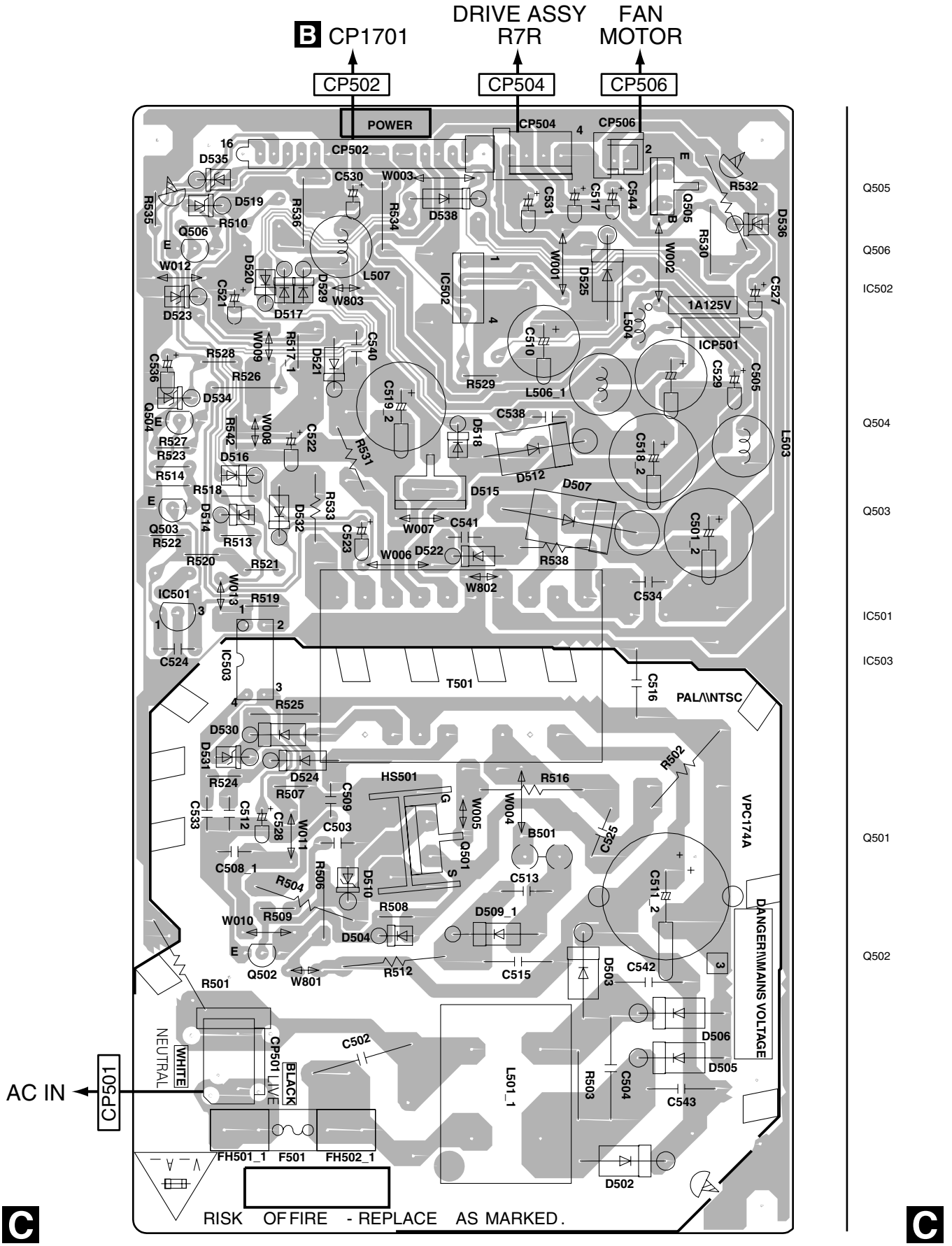


B

4.3 POWER PCB ASSY

SIDE A **SIDE A**

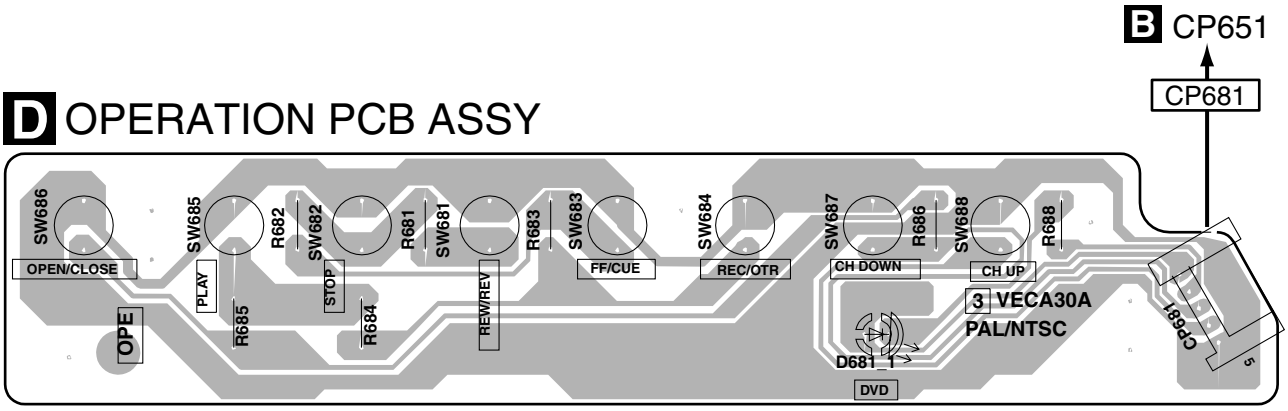
C POWER PCB ASSY



4.4 OPERATION PCB ASSY

SIDE A

SIDE A



D

D

5. PCB PARTS LIST

NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*

● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 x 10[1] → 561 ..... RD1/4PU 5 6 1 J

47k Ω → 47 x 10[3] → 473 ..... RD1/4PU 4 7 3 J

0.5 Ω → R50 ..... RN2H R 5 0 K

1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 x 10[1] → 5621 ..... RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.

LIST OF ASSEMBLIES

	1..DVD/HD MPEG PCB ASSY (RT500)	A2D309AB10
	1..DVD/HD MPEG PCBA SSY (RT300)	A2D311AB10
	1..VCR MT PCB ASSY	A2D309A010
	1..POWER PCB SUPPLY ASSY	A2D309A240
	1..OPERATION PCB ASSY	A2D309A270

Mark	No.	Description	Part No.

SEMICONDUCTORS

	IC101	IC LA71206M-MPB	I03F3206M0
	IC651	IC PT6315	IF4K063150
	IC701	IC AN3663FBP	I01F63FBP0
	IC801	IC AN5829S	I01FF58290
⚠	IC1701	IC LM2902DR	I0CF0902D
	IC3001	IC OEC0142B	I54F50142B
	IC3003	IC XC61CN3102SR	IE2F031020
NSP	IC3099	MEMORY DATA S-24C08AFJA-TB-0	S2D309AE01
*		This is NOT SERVICE PART because the Unit does not work properly when replacing this part. Please replace VCR MTB Assy when replacement of this part is required.	
	IC4001	IC ZR36750E	ICQM067500
	IC4002	MEMORY DATA BR24L16FJ-WE2	S2D309AE02 (for DVR-RT500-S)
	IC4002	MEMORY DATA BR24L16FJ-WE2	S2D309AE03 (for DVR-RT300-S)
	IC4003	IC BD5229G	I97F052290
	IC4004	IC MT48LC8M16A2P-7E	IF6J08M167
	IC4005	IC MT48LC8M16A2P-7E	IF6J08M167
	IC4006	MEMORY DATA LH28F640BFHE-PTTL80	S2D309AF01
	IC4007	IC HY57V561620CT-7	ICLJ020CT7
	IC4008	IC HY57V561620CT-7	ICLJ020CT7
	IC4009	IC ZR35100	ICQK051000
	IC4010	IC SN74LVC1G125DCKR	I5CJ0G1250
	IC7301	IC WM8776SEFT/R	IFJK087760
	IC7302	IC MM1501XNRE	I0UF015010
	IC8301	IC NJM4580M(TE1)	I0QJ045800
	IC8302	IC NJM2534V(TE2)	I0QF02534V
	IC8303	IC NJM2534V(TE2)	I0QF02534V
	IC8304	IC NJM2534V(TE2)	I0QF02534V
	IC8305	IC NJM2534V(TE2)	I0QF02534V
	IC8307	IC LA7210	I03S072100
	IC8308	IC NJM2246M-TE1	I0QF02246M
	IC8309	IC NJM2246M-TE1	I0QF02233M
	Q101	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q102	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q103	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
	Q104	TRANSISTOR,SILICON KTC3203S_Y	TCAT032034
	Q105	TRANSISTOR,SILICON KTA1266	TAATA12660
	Q106	TRANSISTOR,SILICON KTA1504S_Y_RTK	TAAA1504SY
	Q107	TRANSISTOR,SILICON KTA1504S_Y_RTK	TAAA1504SY
	Q109	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q301	TRANSISTOR,SILICON KTC3198	TAAA1504SY
	Q302	COMPOUND TRANSISTOR DTA124EKAT146	TNJYJC05001
	Q303	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q651	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q652	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q1701	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
	Q1703	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
	Q1706	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q1707	COMPOUND TRANSISTOR DTA124EKAT146	TPYJA05001
	Q1708	TRANSISTOR,SILICON KTB1151	TBA0011510
	Q1709	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q1710	TRANSISTOR,SILICON KTC3203	TCAT032034
	Q1711	TRANSISTOR,SILICON KTC3203	TCAT032034
	Q1712	TRANSISTOR,SILICON KTC3875S	TCAA3875SY
	Q1713	TRANSISTOR,SILICON KTB1151	TBA0011510
	Q1716	TRANSISTOR,SILICON KTC3209	TCAT032034
	Q1717	COMPOUND TRANSISTOR DTA124EKAT146	TNYJC05001
	Q1720	TRANSISTOR,SILICON KTC3209	TCAT03209Y
	Q1721	TRANSISTOR,SILICON KTA1281	TAAT0128Y
	Q1722	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q1723	TRANSISTOR,SILICON KTA1271	TAAT012714
	Q1724	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q3001	PHOTO COUPLER RPI-303	2700690
	Q3002	PHOTO COUPLER RPI-303	2700690
	Q3004	PHOTO COUPLER RPI-352C40N	2700680
	Q3005	PHOTO COUPLER RPI-352C40N	2700680
	Q3006	PHOTO TRANSISTOR ST-304L	0000M00390
	Q3007	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
	Q3008	PHOTO TRANSISTOR ST-304L	0000M00390
	Q7301	COMPOUND TRANSISTOR KRC103SRTK	TNAAC05002
	Q8001	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8002	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8003	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8004	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
	Q8005	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8006	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8007	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8008	COMPOUND TRANSISTOR DTC124EKAT146	TPYJC05001
	Q8009	COMPOUND TRANSISTOR DTC124EKAT146	TPYJC05011
	Q8010	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY

Mark	No.	Description	Part No.
	Q8012	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8013	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8015	TRANSISTOR,SILICON KTA1504S_Y_RTK	TAAA1504SY
	Q8016	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8017	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8018	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8019	COMPOUND TRANSISTOR DTA143EKAT146	TPYJA05001
	Q8020	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8021	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8022	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
	Q8023	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
	Q8025	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8027	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8029	COMPOUND TRANSISTOR DTC124EKAT146	TNYJC05001
	Q8036	COMPOUND TRANSISTOR DTA124EKAT146	TPYJC05001
	Q8301	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8302	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8310	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8311	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8314	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8315	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8320	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	Q8321	TRANSISTOR,SILICON KTC3875S_Y_RTK	TCAA3875SY
	D652	LED LTL-1CHGE-002A	0021E5Q210
	D681	LED LTL-1CHAE-002A	0021E3Q030
	D701	DIODE,SILICON 1SS133T-77	D1VT001330
	D1703	DIODE,SILICON 1SS133T-77	D1VT001330
	D1704	DIODE,SILICON 1SS133T-77	D1VT001330
⚠	D1706	DIODE,ZENER MTZJ12B T-77	D97U01201
	D1707	DIODE,SILICON 1SS133T-77	D1VT001330
	D3001	INFRARED LED LTE-3271T-012A-O	0010E00330
	D3007	DIODE,SILICON 1SS133T-77	D1VT001330
	D3009	DIODE,SILICON 1SS133T-77	D1VT001330
	D8002	DIODE,SILICON 1SS133T-77	D1VT001330
	D8003	DIODE,SILICON 1SS133T-77	D1VT001330
	D8301	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
	D8302	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
	D8303	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
	D8307	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0
	D8314	DIODE,SCHOTTKY RB721Q-40 T-77	D1VTB721Q0

COILS AND TRANSFORMERS

	L101	COIL,BIAS OSC 1626009	031626009R
	L102	COIL 100 UH	02167F101J
	L104	COIL 22 UH	02167F220J
	L105	COIL 22 UH	02167F220J
	L106	COIL 22 UH	02167F220J
	L107	COIL 22 UH	02167F220J
	L109	COIL 100 UH	021LA6101J
	L301	COIL 22 UH	02167F220J
	L651	COIL 100 UH	021LA6101J
	L701	COIL 22 UH	02167F220J
	L702	COIL 22 UH	02167F220J
	L703	COIL 100 UH	021LA6101J
	L704	COIL 22 UH	02167F220J
	L801	COIL 100 UH	02167F101J
	L1701	CORE,FERRITE W5T29X7.5X19	02AHB9A972
	L1702	COIL 47 UH	02167F470J
	L3003	COIL 12 UH	021LA6120J
	L7301	COIL 1 UH	0216S71R0J
	L7302	COIL 1 UH	0216S71R0J
	L7303	COIL 1 UH	0216S71R0J
	L7304	COIL 1 UH	0216S71R0J
	L7305	COIL 1 UH	0216S71R0J
	L7306	COIL 1 UH	0216S71R0J
	L7307	COIL 6.8 UH	0216S76R8J
	L7308	COIL 6.8 UH	0216S76R8J
	L7309	COIL 6.8 UH	0216S76R8J
	L8001	COIL 100 UH	021LA6101J
	L8002	COIL 100 UH	02167F101J
	L8003	COIL 22 UH	02167F220J
	L8301	COIL 22 UH	02167F220J
	L8302	COIL 100 UH	02167F101J
	L8305	COIL 100 UH	02167F101J
	L8306	COIL 220 UH	02167F221J

SWITCHES

	SW651	SWITCH,TACT EVQ21505R	0504101T34
	SW652	SWITCH,TACT EVQ21505R	0504101T34
	SW653	SWITCH,TACT EVQ21505R	0504101T34
	SW681	SWITCH,TACT EVQ11L05R	0504R01T38
	SW682	SWITCH,TACT EVQ11L05R	0504R01T38
	SW683	SWITCH,TACT EVQ11L05R	0504R01T38
	SW684	SWITCH,TACT EVQ11L05R	0504R01T38
	SW685	SWITCH,TACT EVQ11L05R	0504R01T38
	SW686	SWITCH,TACT EVQ11L05R	0504R01T38
	SW687	SWITCH,TACT EVQ11L05R	0504R01T38
	SW688	SWITCH,TACT EVQ11L05R	0504R01T38
	SW3001	SWITCH (LEAF) LSA-1144EAU	0508S11001

RESISTORS

⚠	R531	R,FUSE 22 OHM 1/4W	R65584220
⚠	R533	R,FUSE 2.7 OHM 1/4W	R655842R7
⚠	R1750	R,METAL OXIDE 1.5 OHM 2W	R3X28A1R5

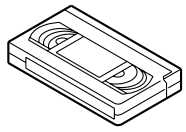
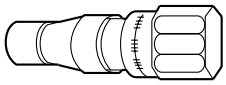
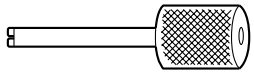
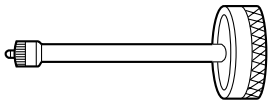
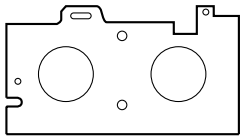
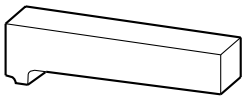
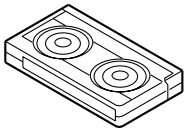
OTHERS

	B651	CORE,BEADS FCM2012H-102T04	024HC31022
	B652	CORE,BEADS FCM2012H-102T04	024HC31022
	B653	CORE,BEADS FCM2012H-102T04	024HC31022
	B654	CORE,BEADS FCM2012H-102T04	024HC31022
	B655	CORE,BEADS FCM2012H-102T04	024HC31022
	B4001	CORE,BEADS FCM2012H-102T04	024HC31022
	B4002	CORE,BEADS HCB2012K-600T25	024HC36001
	B4003	CORE,BEADS HCB2012K-600T25	024HC36001
	B4004	CORE,BEADS HCB2012K-600T25	024HC36001
	B4005	CORE,BEADS HCB2012K-600T25	024HC36001
	B4006	CORE,BEADS FCM2012H-102T04	024HC31022
	B4007	CORE,BEADS FCM2012H-102T04	024HC31022
	B4008	CORE,BEADS FCM2012H-102T04	024HC31022
	B7301	CORE,BEADS FCM2012H-102T04	024HC31022
	B7304	CORE,BEADS HCB2012K-600T25	024HC36001
	B7305	CORE,BEADS HCB2012K-600T25	024HC36001
	B7306	CORE,BEADS HCB2012K-600T25	024HC36001
	B7307	CORE,BEADS HCB2012K-600T25	024HC36001
	B8001	CORE,BEADS FCM2012H-102T04	024HC31022
	B8002	CORE,BEADS FCM2012H-102T04	024HC31022
	BT601	BATTERY, MANGAN R03(AB)E_2P_G	1412004008
	CD102	CORD,JUMPER 2F061501	0122F061501
⚠	CD501	CORD,SET AC 9619904	120961990
	CD502		WPL6016038
		FLAT CABLE AWM2468 A WG26 16C BLACK 160MM	

Mark	No.	Description	Part No.
	CD504	CORD,CONNECTOR CU641202	06CU641202
	CD651	CORD,CONNECTOR CU252802	06CU252802
	CP101	CONNECTOR PCB SIDE TOC-C09X-A1	697290620
A	CP102	CONNECTOR PCB SIDE IMSA-9604S-06C	069J760599
	CP103	WIRE HOLDER B2013H02-2P	067U002019
	⚠CP502	WIRE HOLDER B2013H02-16P	067U01601
	⚠CP681	CONNECTOR PCB SIDE A2001WR2-5P	069S25063
	CD4001	CORD,JUMPER BH040061	12BH040061
	CD6002	CABLE CPL02006	06CPL02006
	CD6003	CORD,RCA PIN TD-020301-3	06CPBA2003
	CD7301	CORD,JUMPER 2H0K1802	122H0K1802
	CD7302	CORD,JUMPER 2H0K1802	122H0K1802
	CD7303	CORD,JUMPER 2H0I1802	122H0I1802
	CD7304	CORD,CONNECTOR CU2A2701	06CU2A2701
B	⚠CP1701	CONNECTOR PCB SIDE 52147-1610	069R2G058
	CP1703	CONNECTOR PCB SIDE A2001WV2-10P	069S2A0629
	⚠CP3001	CONNECTOR PCB SIDE TMC-J12P-B2	06972C001
	CP4001	CONNECTOR PCB SIDE 04_6274_000_800	069S2A0629
	CP7304	CONNECTOR PCB SIDE A2001WV2-10P	069S2A0629
	CP8301	CONNECTOR PCB SIDE IMSA-9615S-20C-PP-A	069JVK0200
	CP8302	CONNECTOR PCB SIDE IMSA-9615S-20C-PP-A	069JVK0200
	CP8303	CONNECTOR PCB SIDE IMSA-9615S-18C-PP-A	069JVI0200
C	⚠DK4001	DECK CD DVR-R07OR	169V00030
	ICP501	MICRO FUSE 20N_1000FS	0835C01003
	ICP1701	MICRO FUSE 20N_1250FS	0835C01203
	⚠M501	FAN MOTOR 2410ML-04W-B10-C47	1519X56L0
	NR4001	R,NETWORK 4D03WGJ0470T5E	110P4470M4
	NR4002	R,NETWORK 4D03WGJ0470T5E	110P4470M4
	NR4003	R,NETWORK 4D03WGJ0470T5E	110P4470M4
	NR4004	R,NETWORK 4D03WGJ0470T5E	110P4470M4
	NR4005	R,NETWORK 4D03WGJ0470T5E	110P4470M4
	NR4006	R,NETWORK 4D03WGJ0470T5E	110P4470M4
D	NR4007	R,NETWORK 4D03WGJ0470T5E	110P4470M4
	NR4008	R,NETWORK 4D03WGJ0470T5E	110P4470M4
	OS651	REMOTE RECEIVER PIC-37041LO-H	077Q037012
	OS8001	OPTICAL DEVICE OFTG038101	07AQ000009
	TM601	TRANSMITTER R56-0517	076R0JZ010
	TU301	RF UNIT 115-V-H015ARE_G	162300041
	V651	TUBE FLUORSCENT DISPLAY HNV-09SS48	096F90R404
	X101	CRYSTAL HC-49/U	100DT3R528
	X3001	CRYSTAL HC-49/U-S	100CT01002
	X3002	CRYSTAL DT-26	100DA32R01
E	X3003	CRYSTAL HC-49/U-S	100CT01403
	X4001	CRYSTAL DSO751SV	100DT02712
	X8301	CERAMIC OSCILLATOR CSB500E5	1002A0R503
	J651	RCA JACK MSP-281V31-A	060J421039
	J652	RCA JACK MSP-281V40-B	060J401098
	J653	RCA JACK MSP-281V42-B	060J401099
	J654	JACK MDC-012V1-A_LF	063D700010
	J8001	JACK MDC-012V1-A_LF	063D700009
	J8002	RCA JACK MSP-213V2-432_NI_LF	060J431020
	J8003	RCA JACK MSP-213V1-432_NI_LF	060J411031
	J8004	JACK MDC-070-B_LF	063D700008
F	J8005	RCA JACK MSP-213V1-732_NI_LF	060J41033
	J8006	RCA JACK MSP-213V1-652_NI_LF	060J411032

6. ADJUSTMENT

6.1 SERVICING FIXTURES AND TOOLS

(For 4 heads model) VHS Alignment Tape GGV1183 (VN1S-LI63H) GGV1184 (VN1S-X63) GGV1185 (VN2E-LI63H) 	GGF1506 Adapter GGF1507 Dial Torque Gauge (10~90 gf•cm) GGF1508 (60~600 gf•cm) 	GGF1509 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 	GGF1510 X Value Adjustment Screwdriver 
GGF1511 Master Plane 	GGF1512 Reel Disk Height Adjustment Jig 	GGV1186 Torque Tape (VHT-063) 	

Part No.	Parts Name	Remarks
GGV1183	VHS Alignment Tape	Hi-Fi Audio **(For 4 heads model)**
GGV1184	VHS Alignment Tape	X Value Adjustment **(For 4 heads model)**
GGV1185	VHS Alignment Tape	EP Monoscope, 6 kHz **(For 4 heads model)**
GGF1506	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Assy)
GGF1507	Dial Torque Gauge (10~90 gf•cm)	Brake Torque (T Reel Assy)
GGF1508	Dial Torque Gauge (60~600 gf•cm)	VSR Torque, Brake Torque (S Reel)
GGF1509	Post Adjustment Screwdriver	Guide Roller Adjustment
GGF1510	X Value Adjustment Screwdriver	X Value Adjustment
GGF1511	Master Plane	Reel Disk Heifht Adjustment
GGF1512	Reel Disk Height Adjustment Jig	Reel Disk Heifht Adjustment
GGV1186	Torque Tape (VHT-063)	Playback Torque, Back Tension Torque During Playback

■ PREPARATION FOR SERVICING

1. While pressing the CH DOWN button on the set for more than 2 seconds, press the POWER button on the set simultaneously at the Power OFF. Although the DVD is connected, the DVD mode cannot be selected.
2. Press both CH UP button on the set and the REC button on the set for more than 2 seconds. (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
3. In case of using a cassette tape, press the EJECT button to insert or eject a cassette tape. Turn on the power and re-check the cable before checking the trouble points.

When you servicing with connection of DVD, perform the operations above step 2 to step 3.

6.2 ADJUSTMENT ITEMS AND NECESSARY ADJUSTMENT POINTS

■ Adjustment Items

[Mechanism Part]

1. CONFIRMATION AND ADJUSTMENT

① 1-1 CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT
② 1-2 CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION
③ 1-3 CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK
④ 1-4 CONFIRMATION OF VSR TORQUE
⑤ 1-5 CONFIRMATION OF REEL BRAKE

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

⑥ 2-1 GUIDE ROLLER
⑦ 2-2 CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD
⑧ 2-3 TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)
⑨ 2-4 CONFIRM HI-FI AUDIO

[Electrical Part]

1. BASIC ADJUSTMENT

⑩ 1-1 PG SHIFTER
⑪ DVD SIDE EEPROM (IC4002) INITIAL SETTING
REPLACING EEPROM (IC4002) IC
⑫ REGION SETTING
REPLACING NEW DVD LOADER

When	Adjustment Items

Replacing Parts of Mechanism Assy

When	Adjustment Items	
Replacing REEL DISK (S REEL, T REEL)	Mechanical point	① ② ③ ④ ⑤
	Electrical point	None
Replacing TENSION BAND TENSION CONNECT TENSION ARM ASSY T BRAKE BAND T BRAKE SPRING T BRAKE ARM IDLLER ASSY CLUTCH ASSY	Mechanical point	② ③ ④ ⑤
	Electrical point	None
Replacing HEAD (AUDIO CONTROL) CYLINDER UNIT ASSY	Mechanical point	⑥ ⑦ ⑧ ⑨
	Electrical point	⑩

Replacing PCB Assy or Electrical Parts

When	Adjustment Items	
Replacing DECK ASSY VCR MT PCB ASSY	Mechanical point	None
	Electrical point	⑩
Replacing IC4002 (DVD SIDE EEPROM)	Mechanical point	None
	Electrical point	⑪
Replacing DVD LOADER	Mechanical point	None
	Electrical point	⑫

6.3 SERVICE MODE LIST

To enter one of the Sub-Service modes, hold a designated key on the unit pressed for a specified period of time while holding another designated key on the unit or on the remote control unit pressed.

Mode of the Unit	Key on the Unit	Key on the Unit	Specified Period (sec)	Description
VCR	FF	CH+	2	For (1) initial setting of the μ-CON on the VCR side, (2) confirmation of initial settings for the Memory IC, and (3) displaying the accumulated time of playback and recording on the screen.
VCR	PLAY	CH+	2	Initialization to the state at shipment **Note:** Do NOT use this mode during normal servicing. This mode will reset the time setting, channel setting, and the accumulated time of playback/recording.
VCR (Playback)	CH+	CH–	2	For setting tracking to the center value **Note:** You can enter this mode by holding the ATR key on the remote control unit pressed for 2 seconds.
VCR (Playback)	REC/OTR	DVD/VCR	2	For automatic adjustment of the PG shifter
VCR	CH+	REC/OTR	2	For entering Service mode Entering this mode disables the EOT/BOT/reel sensor and enables the VCR section of the unit to operate even if a tape is not loaded.
VCR	STOP	CH+	2	For entering DVD-Audio-Level/Separation Adjustment mode
DVD	CH–	DVD/VCR	2	For displaying information
VCR	CH–	S-BY/ON	2	For entering Operation-of-Only-VCR-Section mode **Note:** In this mode, you cannot switch to DVD mode even if connection of the DVD section has been made.

The following Sub-Service modes can be entered by first holding the designated key on the remote control unit pressed then pressing another designated key on the unit.

Mode of the Unit	Key on the Remote Control Unit	Key on the Unit	Specified Period (sec)	Description
DVD (NO DISC)	0	STOP	2	For setting and unlocking the TRAY Lock. This mode functions cyclically.
DVD (NO DISC)	2	STOP	2	F/W Writing mode
DVD	6	STOP	2	For initial setting of μ-CON on the DVD side
DVD (NO DISC)	7	STOP	2	For canceling Parental Lock **Note:** This mode functions only when a disc is not loaded in DVD mode
DVD (NO DISC)	8	STOP	2	For entering Region-Code Writing mode
DVD (Playback, NO DISC)	9	STOP	2	For displaying Loader Information and error rates

For switching the RF output channels (CH 3/4)
While the unit is off, hold the 3 or 4 key on the remote control unit pressed for at least 3 seconds.

6.4 CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the VCR mode.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   The **Fig. 1** screen will appear on TV Monitor.
4. After the confirmation of using hours, turn off the power.

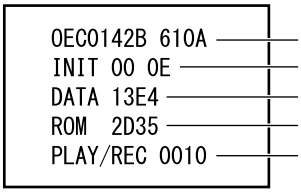


Fig. 1

MICON Version
Initial setting content of MEMORY IC.
Initial setting data check sum.
Romcorrection data check sum.
PLAY/REC total hours.
= (16 × 16 × 16 × thousands digit value)
+ (16 × 16 × hundreds digit value)
+ (16 × tens digit value)
+ (ones digit value)

6.5 PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Assy		●	●	●	●	
Idler Arm Assy		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

■ : Clean
● : Check it and if necessary, replace it

CLEANING

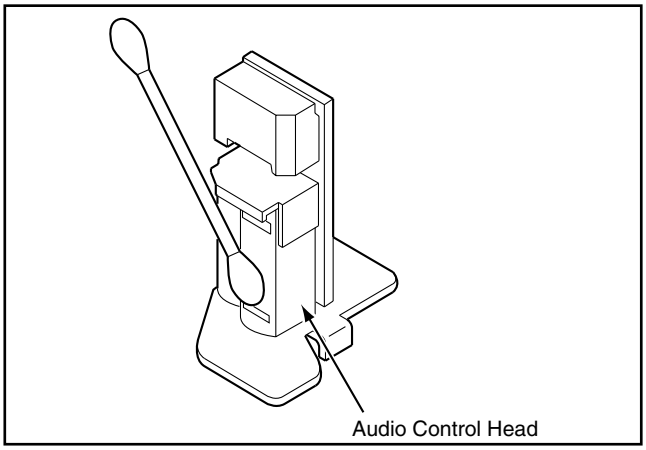
NOTE
After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

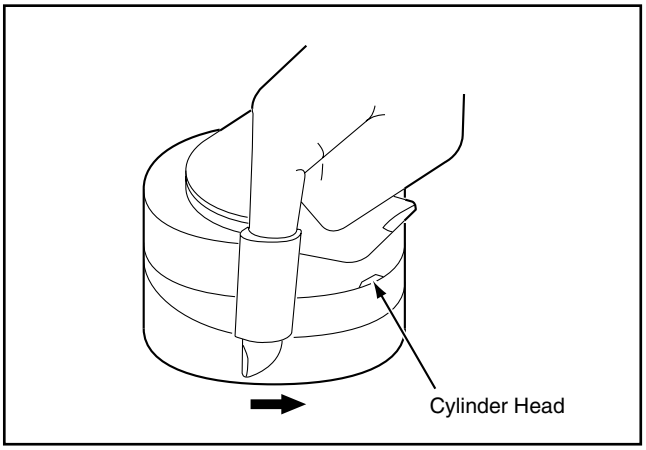
1. AUDIO CONTROL HEAD
Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**

2. TAPE RUNNING SYSTEM
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER
Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE
Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.





6.6 MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder.
  (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane (**JG022**) and reel disk height adjustment jig (**JG024A**) on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig (**JG024A**) and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10 (+2, -0) mm.
4. Adjust the other reel in the same way.

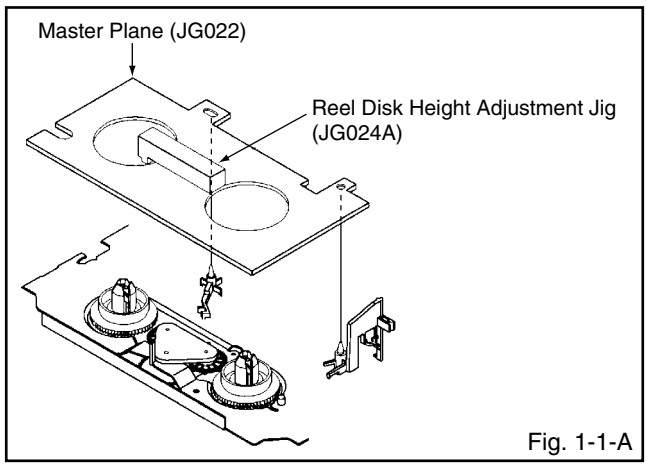


Fig. 1-1-A

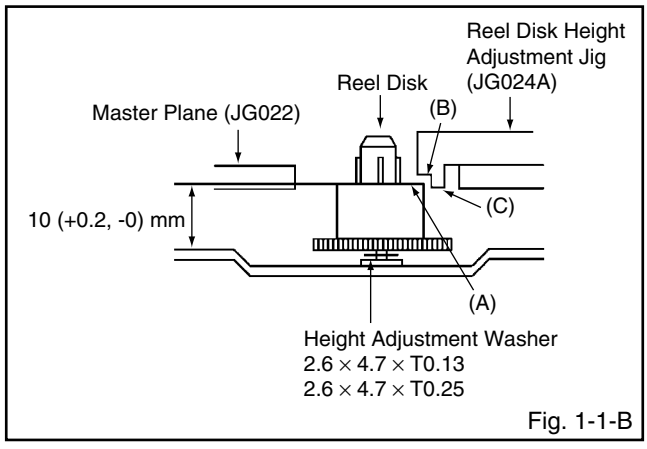


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

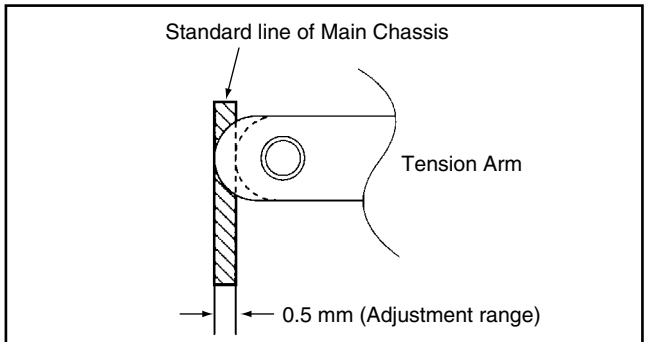


Fig. 1-2-A

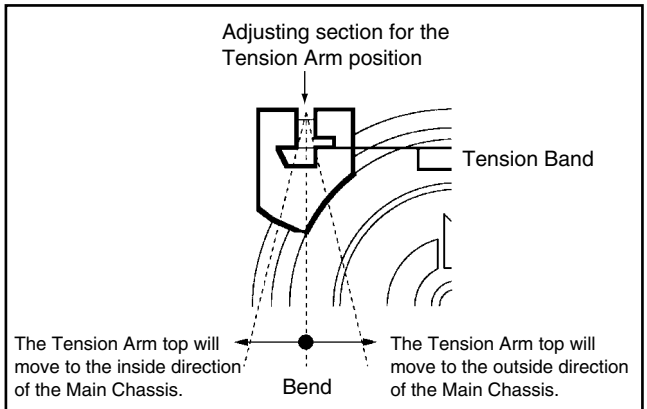


Fig. 1-2-B

• USING A CASSETTE TYPE TORQUE TAPE (**JG100A**)

1. After confirmation and adjustment of Tension Post position (**Refer to item 1-2**), load the cassette type torque tape (JG100A) and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge (**JG002F**) and Adapter (**JG002B**) on the S Reel. Set to the Picture Search (Rewind) mode. (**Refer to Fig.1-4-B**)
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) (**Refer to Fig. 1-4-B**)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Assy from the S Reel.
3. Install the Torque Gauge (**JG002F**) and Adapter (**JG002B**) on the S Reel. Turn the Torque Gauge (**JG002F**) clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) (**Refer to Fig. 1-4-B**)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Assy from the T Reel.
3. Install the Torque Gauge (**JG002E**) and Adapter (**JG002B**) on the T reel. Turn the Torque Gauge (**JG002E**) counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

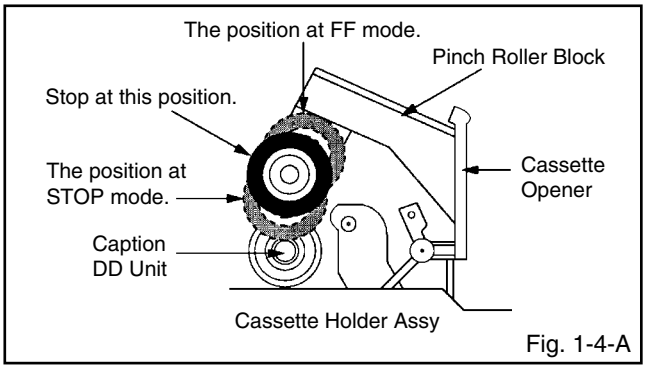


Fig. 1-4-A

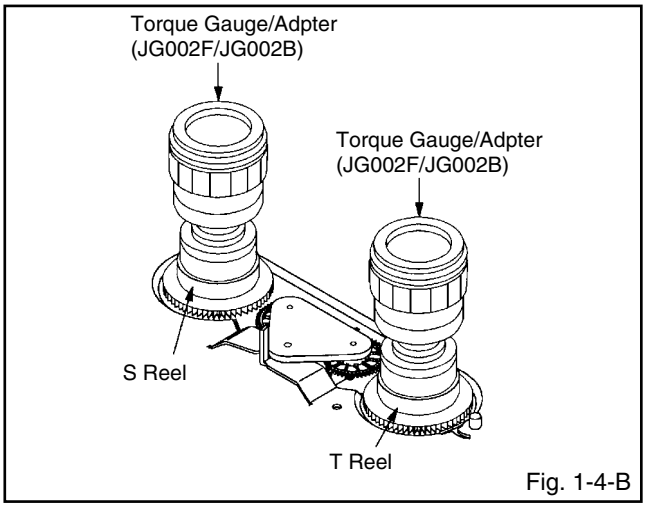


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check Item	Replacement Part
1-4	Idler Assy / Clutch Assy
1-5	S Reel side : S Reel/ Tension Band/Tension Connect/Tension Arm Assy T Reel side : T Reel/ Brake Band/T Brake Spring /T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (**JG001** or **JG001B**). (**Refer to SERVICING FIXTURE AND TOOLS**)
2. Connect CH-1 of the oscilloscope to **TP101** (**Envelope**) and CH-2 to **TP3002** (**SW Pulse**).
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. (**Refer to Fig. 2-1-A**)
5. When observing the envelope, adjust the Adjusting Driver (**JG005**) slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. **(Refer to the ELECTRICAL ADJUSTMENTS)**

NOTE

After adjustment, confirm and adjust A/C head. **(Refer to item 2-2)**

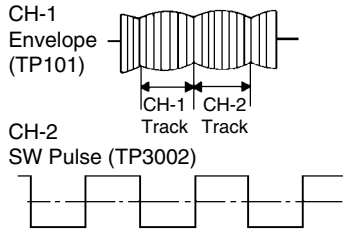


Fig. 2-1-A

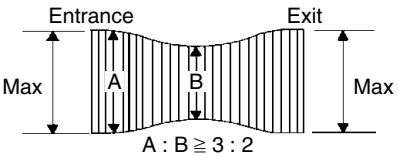


Fig. 2-1-B

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (**JG001** or **JG001B**). (Refer to SERVICING FIXTURE AND TOOLS)
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

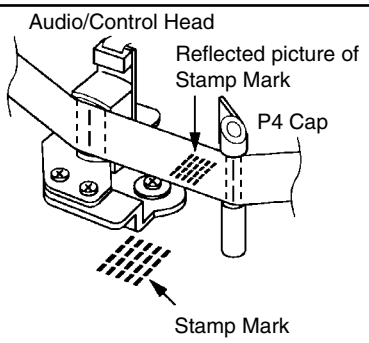


Fig. 2-2-A

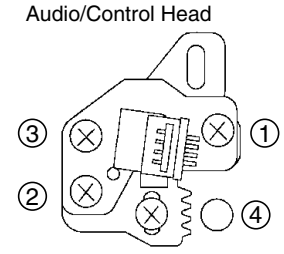


Fig. 2-2-B

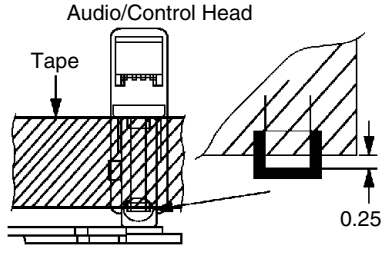


Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. (**Refer to item 1-1**)
2. Confirm and adjust the position of the Tension Post. (**Refer to item 1-2**)
3. Adjust the Guide Roller. (**Refer to item 2-1**)
4. Confirm and adjust the Audio/Control Head. (**Refer to item 2-2**)
5. Connect CH-1 of the oscilloscope to **TP3002**, CH-2 to **TP101** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape (**JG001S** or **JG001T**). (**Refer to SERVICING FIXTURE AND TOOLS**)
7. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver (**JG153**) to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3**.
9. Playback the VHS Alignment Tape (**JG195**). (**Refer to SERVICING FIXTURE AND TOOLS**)
10. Check if the picture is played back correctly.

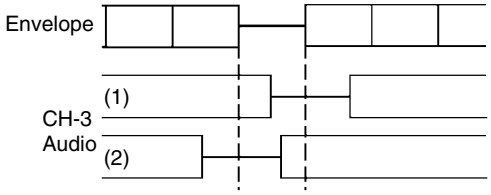
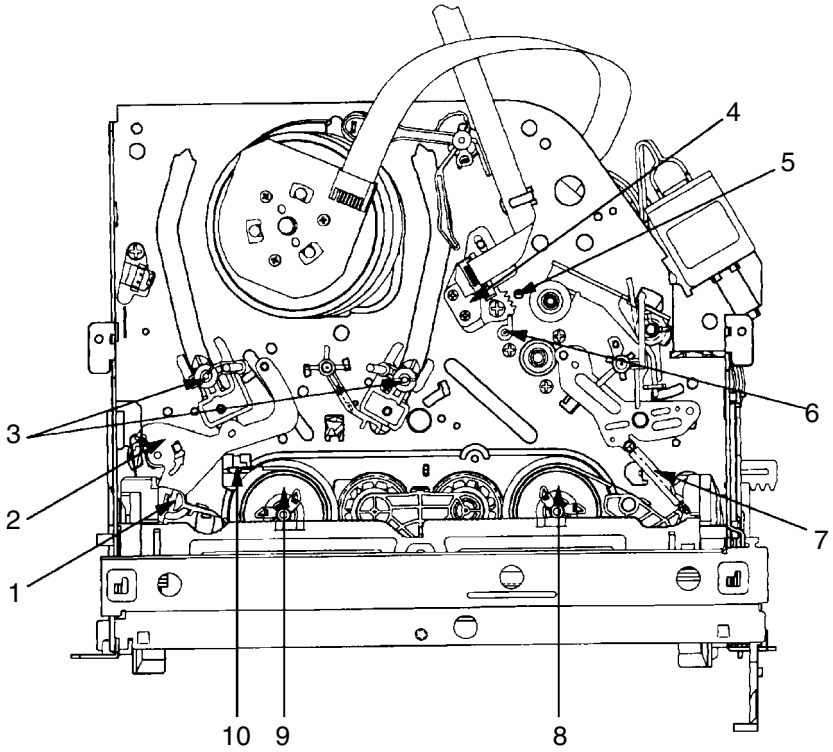


Fig. 2-3

2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to **TP101** and CH-2 to the **Hi-Fi Audio Out Jack**.
2. Playback the VHS Alignment Tape (**JG001P** or **JG001Q**). (**Refer to SERVICING FIXTURE AND TOOLS**)
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
6. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
7. If the difference are more than 3 steps, set the X Value adjustment driver (JG153) to ④ of Fig. 2-2-B. Change the X Value and adjust it so that the value becomes within 2 steps.

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

6.7 ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When you exchange IC and Transistor for a heat sink, apply the silicon grease (**YG6260M**) on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape (**JG001B**)

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP3002** and CH-2 to **J8005**.
2. Playback the alignment tape. (**JG001B**)
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press both CH UP button on the set and the STOP button on the set for more than 2 seconds.

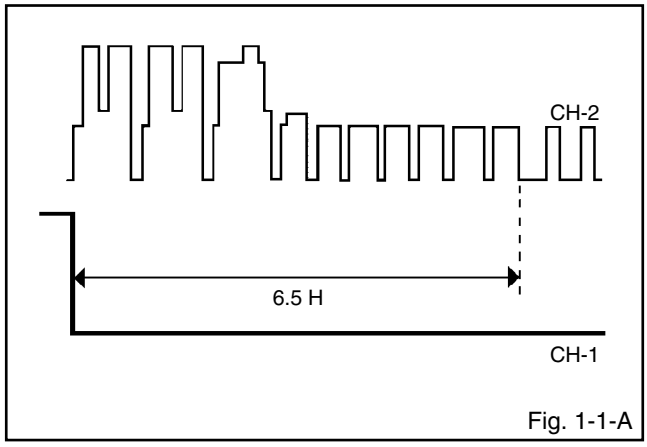


Fig. 1-1-A

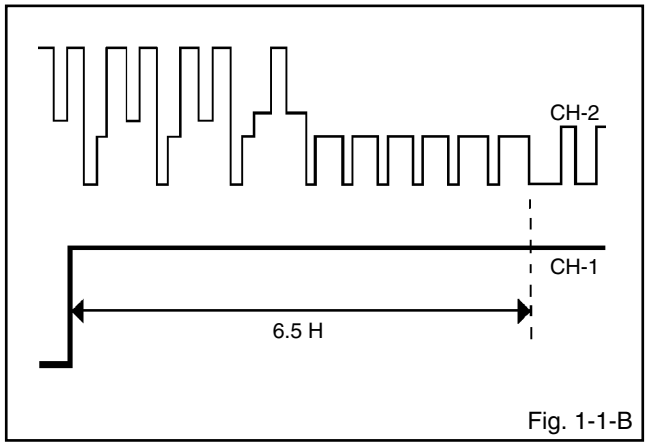
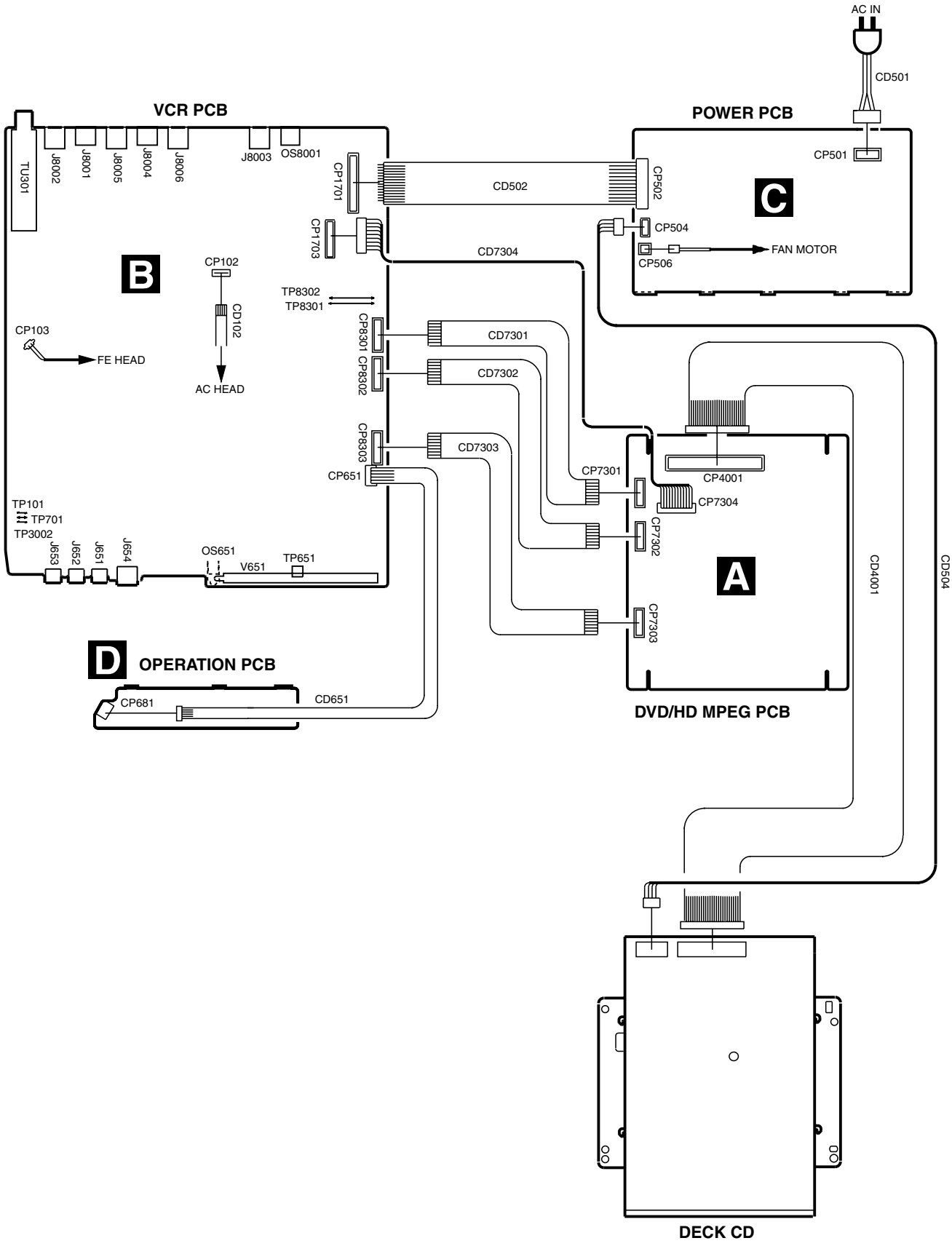


Fig. 1-1-B

2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



6.8 WHEN REPLACING NEW DVD LOADER

NOTE:
If a service repair is undertaken where it has been required to change the New DVD Loader, Region setting is needed.
If the Region setting does not performed, only the Region Free disc can be played.
Region setting can only be done once. So, take notice very carefully.

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the DVD mode.
3. Press both Channel button (**8**) on the remote control and the STOP button on the set for more than 2 seconds.
   Tray will open.
4. Place your Region setting disc (Region 1) on the tray and close.
   Writing will start.
5. After the writing, the writing Region No. will appear on the TV Monitor.

Perform the initializing of shipping (*)

6. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
7. After the finishing of the initializing of shipping, the unit will turn off automatically.

* : When initializing to shipping data, the VCR operating time record is cleared.

Check for the Region No.

8. Turn on the POWER, and set to the DVD mode.
9. Press both CH DOWN button on the set and the DVD/VCR button on the set for more than 2 seconds.
   Information screen will be displayed on the TV Monitor. (**Refer to Fig. 1**)
10. If the writing Region No. is appeared, the Region setting is completed.
11. Turn off the power.

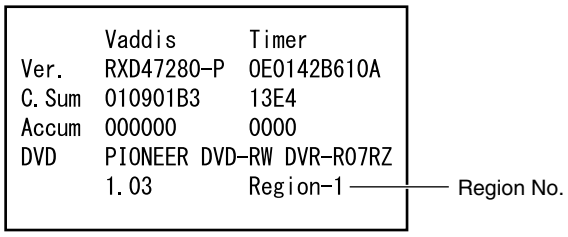


Fig. 1

6.9 WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: After the DATA change, if the ENTER button is not pressed at the DATA selection mode and the power is turned off, the DATA change does not performed.
After the DATA change, press the ENTER button by all means and set to the ADDRESS selection mode, then turn off the power.

DVD side EEPROM (IC4002) initial setting

NOTE: INI 3FF data can not be set.
The datas for the address excepting from 3A0 to 3FF are displayed “ERR”. This unit is not defective.

* Do not change other adress data.

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
3A0	01	01	00	01	02	00	00	00	02	07	01	02	01	02	02	00
3B0	02	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3F0	00	00	00	00	00	00	00	00	00	00	00	00	00	01	09*	---

* RT500=09
RT300=11

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the DVD mode.
3. Press both Channel button **(6)** on the remote control and the STOP button on the set for more than 2 seconds. ADDRESS and DATA will appear on TV Monitor as **Fig 1** and the ADDRESS is now selected.

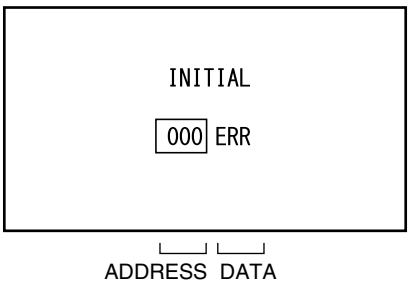


Fig. 1

4. Input the ADDRESS by using Channel +/- button or the following buttons below.
   Numbers are 10 keys from 0 to 9, Alphabets are
   A: VCR EJECT, B: DVD OPEN/CLOSE, C: DVD/VCR, D: TIMER REC, E: INPUT SELECT, F: DISPLAY/CALL.
5. Press ENTER to select DATA.
6. Again, step through the DATA using Channel + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping (*).

10. Turn on the POWER, and set to the DVD mode.
11. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
12. After the finishing of the initializing of shipping, the unit will turn off automatically.
    The unit will now have the correct DATA for the new MEMORY IC.

* : When initializing to shipping data, the VCR operating time record is cleared.

7. GENERAL INFORMATION

7.1 RE-WRITE FOR DVD FIRMWARE

1. Connect the set to TV Monitor.
2. Turn on the POWER, and set to the DVD mode.
3. Confirm that the “No Disc” will be appeared on the screen.
   A disc is already inserted, eject the disc and power it off and on again.
4. Open the DVD tray.
5. Press both Channel button (2) on the remote control and the STOP button on the set for more than 2 seconds.
6. Press OPEN/CLOSE button on the set to check if all the keys on the unit do not function.
   NOTE: To check if DVD Write mode is set.
7. Place the Up-Date Disc and close the tray by hand. (Refer to SERVICING FIXTURE AND TOOLS)
8. Automatic read will start and "SDRAM writing" will be displayed on the screen.
9. Approx. 7 seconds later, the tray will open automatically. Remove the Up-Date Disc.
   The display will change to “FLASH writing”.
10. Then, Approx. 2 minutes 30 seconds later, the above indication will disappear and the tray will close automatically.
    When the "Please Reboot" appears on the screen, the writing will be finished.
    NOTE: Do not turn off the unit on the way or push the tray by hand to close it.
    Up-Date error will happen and can not be done with the Up-Date of Up-Date Disc.
11. Unplug the AC cord, then plug it in.

After the write, set to the initializing of shipping (*).

12. Turn on the POWER, and set to the DVD mode.
13. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
14. After the finishing of the initializing of shipping, the unit will turn off automatically.

* : When initializing to shipping data, the VCR operating time record is cleared.

CHECK FOR THE FIRMWARE VERSION

15. Turn on the POWER, and set to the DVD mode.
16. Press both CH DOWN button on the set and the DVD/VCR button on the set for more than 2 seconds.
    Information screen will be displayed on the TV Monitor. **(Refer to Fig. 1)**
17. When the changed version displays, the Re-write will be completed.
18. Turn off the power

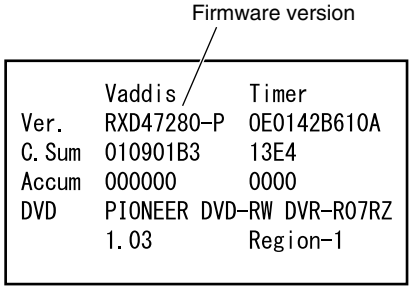


Fig. 1

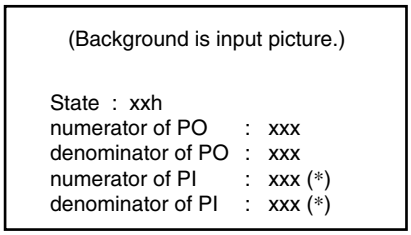
7.2 MEASUREMENT OF ERROR RATE

[Measurement Steps]

1) Load the disc that you want to measure the error rate of.

2) During playback, press "9" on the remote control and "STOP" on the main unit at the same time to measure the error rate for that part of the disc.

3) After the error rate has been measures, it is displayed on the screen. (This display is not updated.)



Error rate value =
numerator of PI / denominator of PI

(*) : decimal digit

Fig. 1

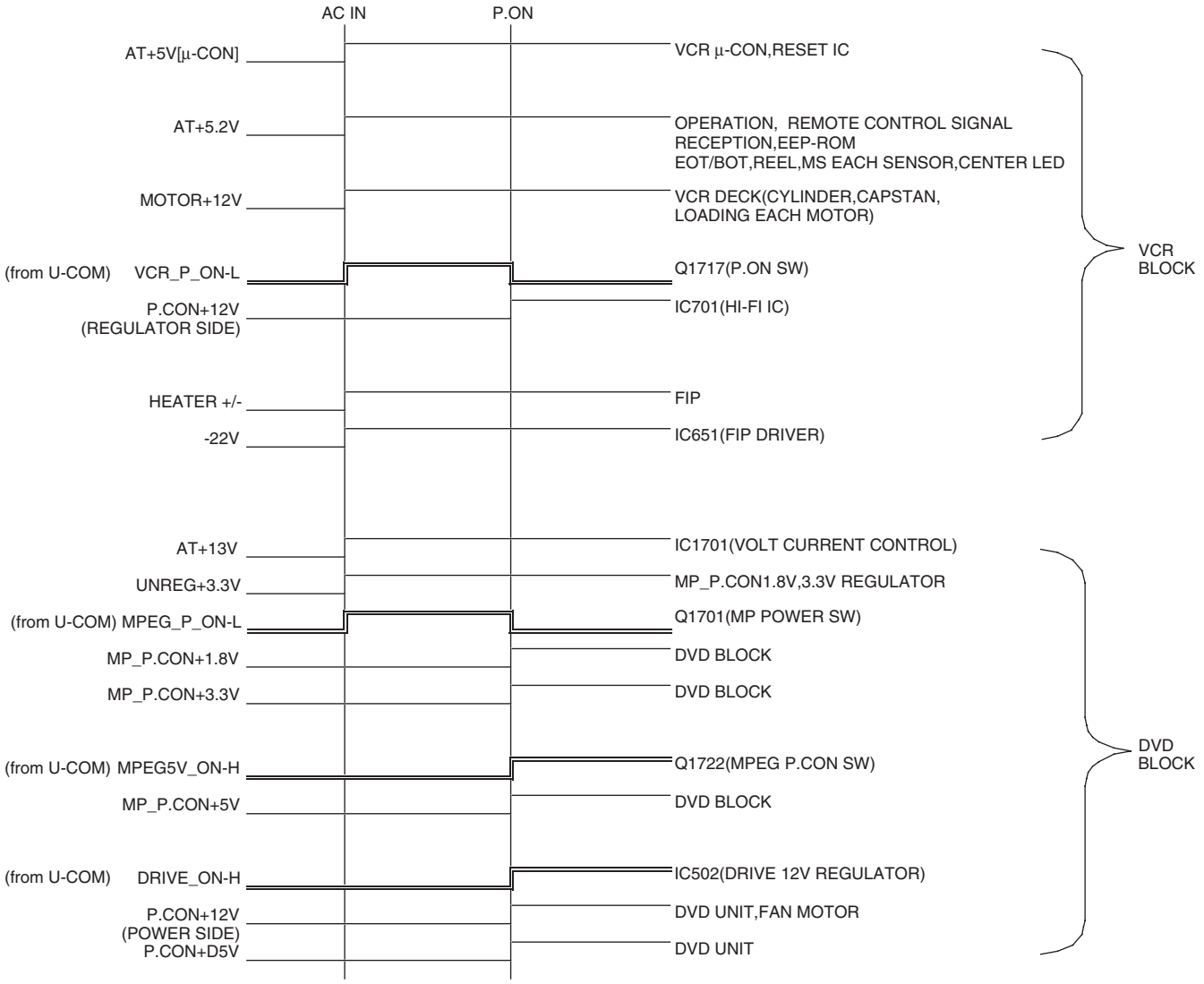
4) To clear the error rate display from the screen, press "9" on the remote control and "STOP" on the main unit at the same time again.
When clearing this display, the error rate measurement is not executed.

Table 1: List of Reference Value

Disc Type	Recording Mode	Reference Value
DVD-VIDEO		8.0×10^{-4}
DVD-R	Video mode	1.0×10^{-3}
DVD-RW	Video mode	1.0×10^{-3}

7.3 POWER ON SEQUENCE

Power on Sequence



7.4 DISC REMOVAL METHOD

1. Insert a fine rod (wire etc.) into the hole of the Front Cabinet as shown by the arrow. **(Refer to Fig. 1)**
   The Tray is opened.
2. Draw the Tray.

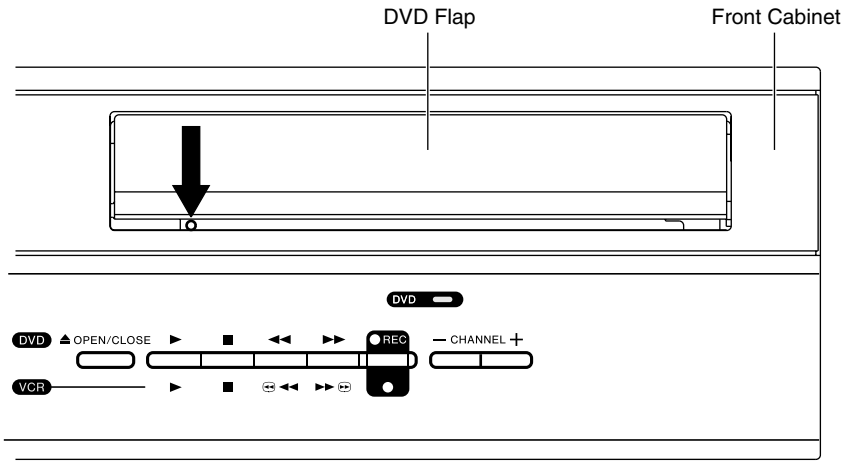


Fig. 1

7.5 TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet, Front Cabinet and DVD Block. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove one screw of the Loading Motor from the insert hole for screw driver and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.
   (Refer to Fig. 2)
4. Rotate the Clutch Ass'y either of the derections to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

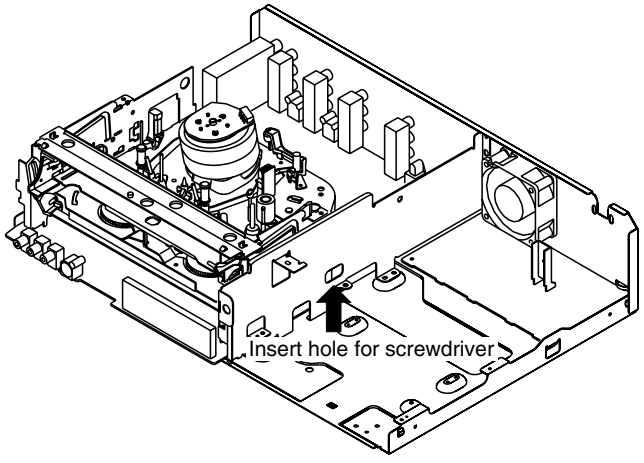


Fig. 1

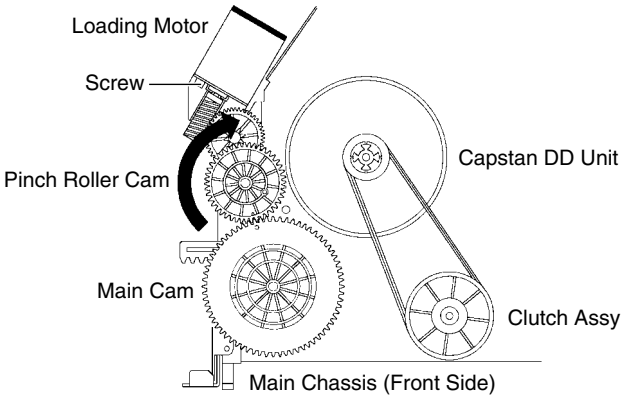


Fig. 2

7.6 PARENTAL CONTROL-RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '7' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 2 seconds.
5. The On Screen Display message 'PASSWORD UNLOCK' will appear.
6. The 4 digit password has now been cleared

NB: No indications on the screen when the Parental Lock is setting.

7.7 TRAY LOCK

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '0' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 2 seconds.
5. Press the OPEN/CLOSE key on the front panel to check the Tray Lock setting.

NB: No indications on the screen when the Tray Lock is setting.

To unlock the Tray Lock, follow the steps above again.

7.8 DISASSEMBLY

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET AND FRONT CABINET (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connector: (CP681).
4. Unlock the 10 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 3 screws ③.
7. Remove the Operation PCB in the direction of arrow (C).

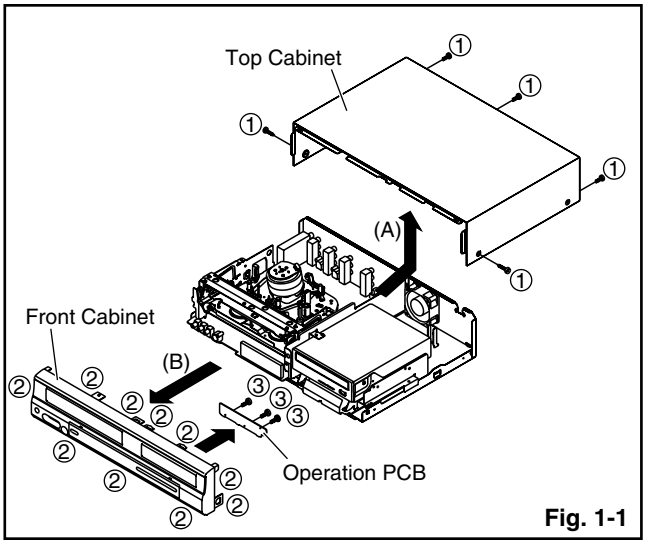


Fig. 1-1

1-2: FLAP (Refer to Fig. 1-2)

1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

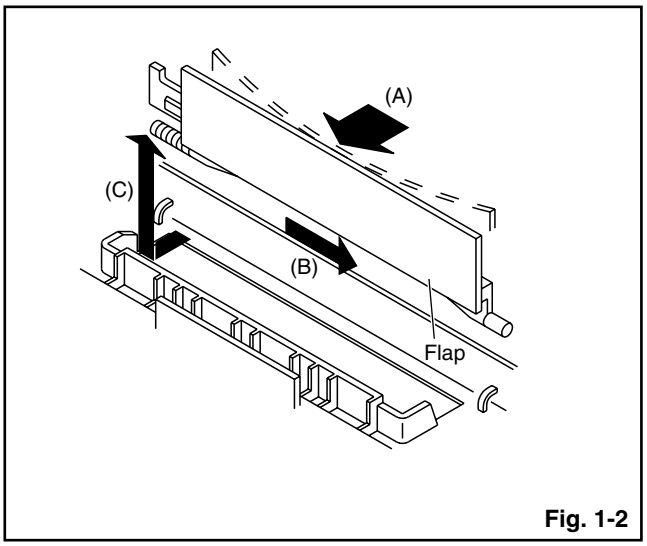


Fig. 1-2

1-3: DECK CD AND DVD/HD MPEG PCB (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Remove the Deck Shield Assy in the direction of arrow (A).
3. Remove the 6 screws ②.
4. Disconnect the following connectors: (CP504, CP1703, CP8301,CP8302, CP8303).
5. Remove the Deck CD Block in the direction of arrow (B).
6. Remove the 4 screws ③.
7. Remove the MPEG Shield in the direction of arrow (C).
8. Disconnect the following connector: (CP4001).
9. Remove the DVD/HD MPEG PCB in the direction of arrow (D).
10. Remove the 2 screws ④.
11. Remove the DVD Angle (L) in the direction of arrow (E).
12. Remove the 2 screws ⑤.
13. Remove the DVD Angle (R) in the direction of arrow (F).

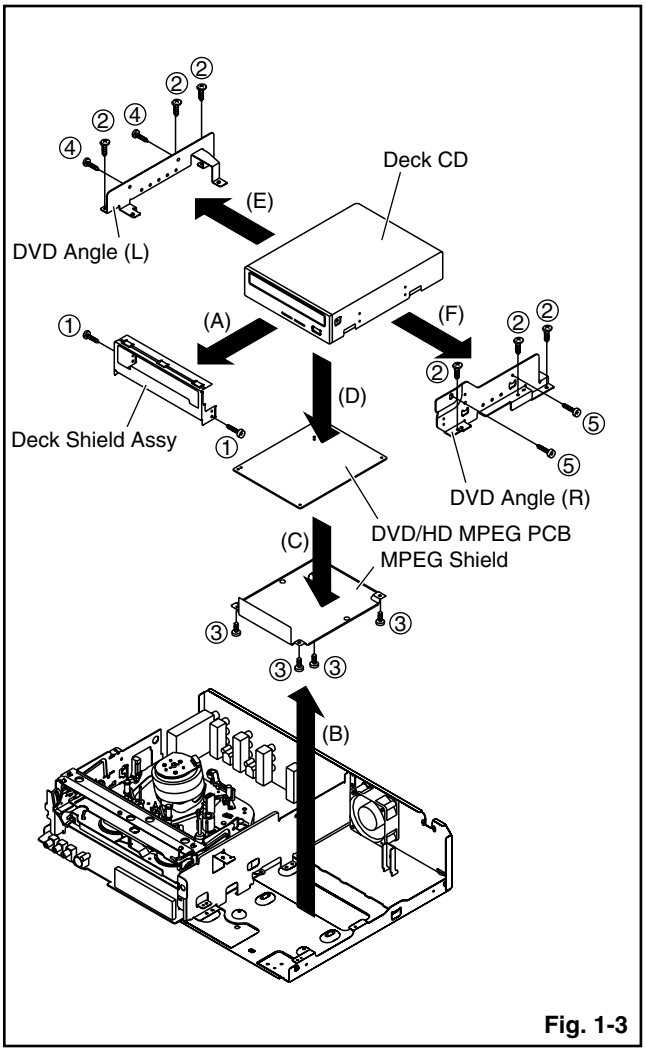


Fig. 1-3

1-4: POWER PCB (Refer to Fig. 1-4)

1. Remove the 2 screws ①.
2. Disconnect the following connector: (CP506).
3. Remove the Fan Motor in the direction of arrow (A).
4. Remove the 3 screws ②.
5. Disconnect the following connector: (CP1701).
6. Remove the Power PCB in the direction of arrow (B).

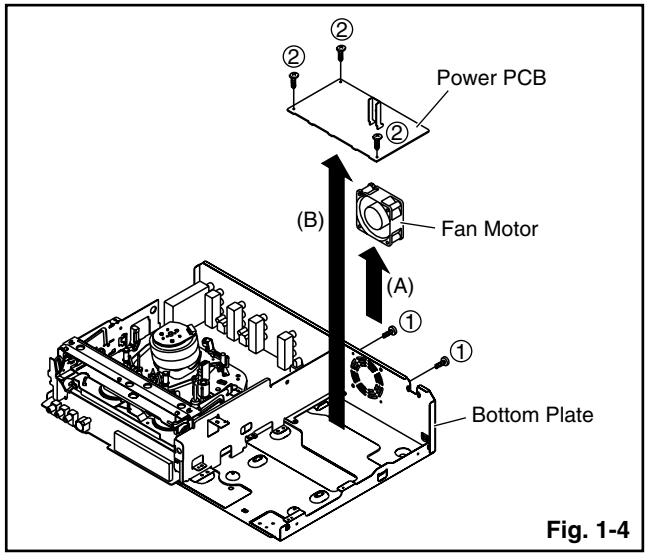


Fig. 1-4

1-5: VCR DECK (Refer to Fig. 1-5)

NOTE:

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Unlock the 2 supports ① and remove the Top Holder.
2. Remove the screw ②.
3. Remove the FE Head.
4. Move the Cassette Holder Assy to the back side.
5. Remove the 3 screws ③.
6. Disconnect the following connectors: (CP101, CP102, CP3001).
7. Remove the AC Head Cover and VCR Deck in the direction of arrow.

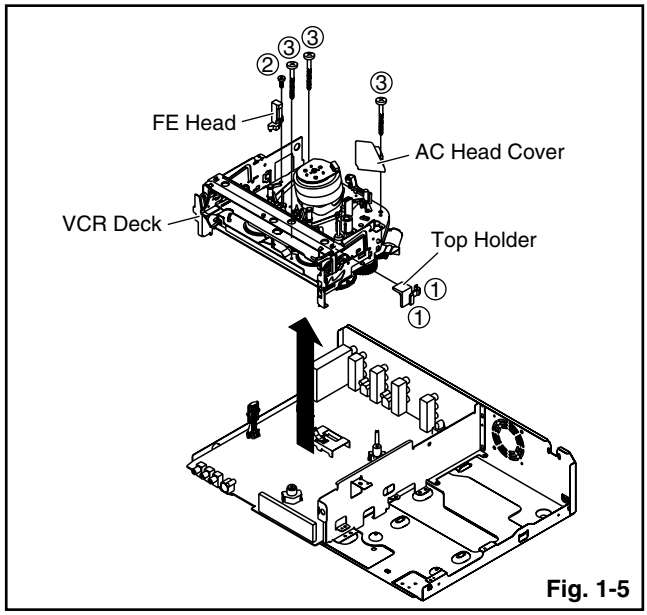


Fig. 1-5

1-6: VCR PCB (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the screw ②.
3. Remove the 7 screws ③.
4. Remove the Jack Shield.
5. Remove the VCR PCB in the direction of arrow.

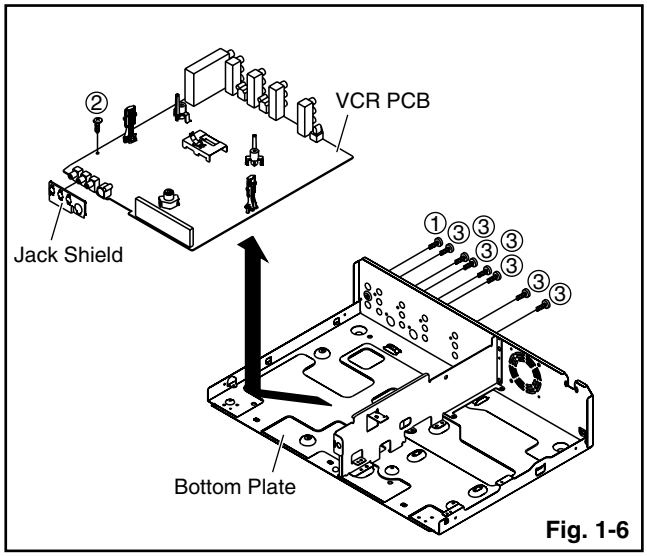


Fig. 1-6

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

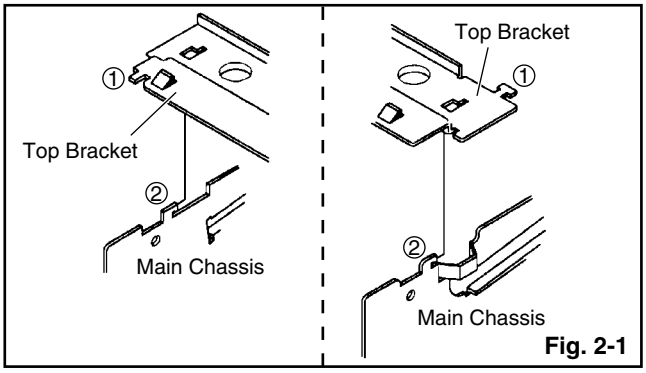


Fig. 2-1

2-2: CASSETTE HOLDER ASSY (Refer to Fig. 2-2)

1. Move the Cassette Holder Assy to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

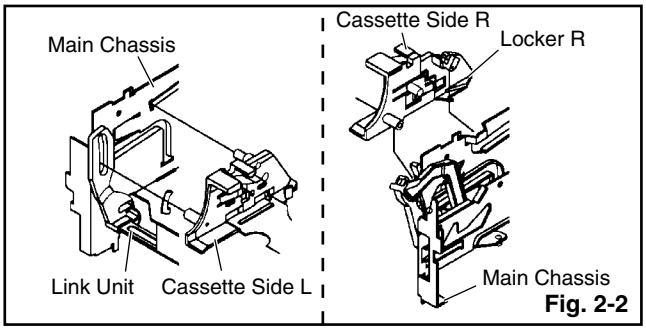


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

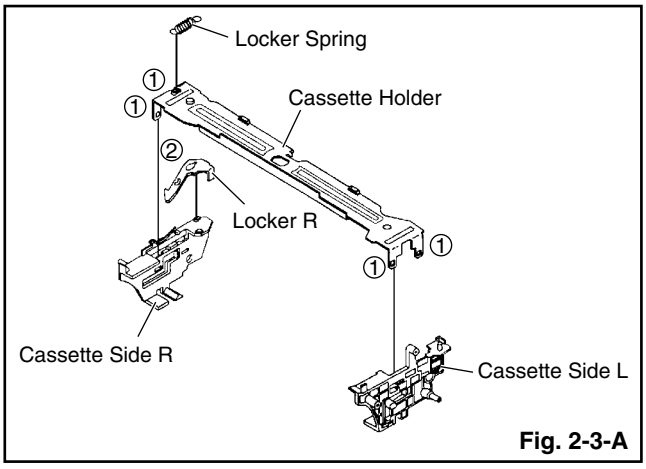


Fig. 2-3-A

NOTE:

1. In case of the Locker R installation, check if the one position of Fig.2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

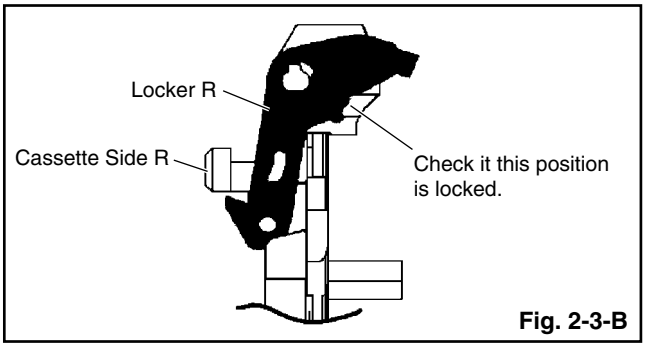


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

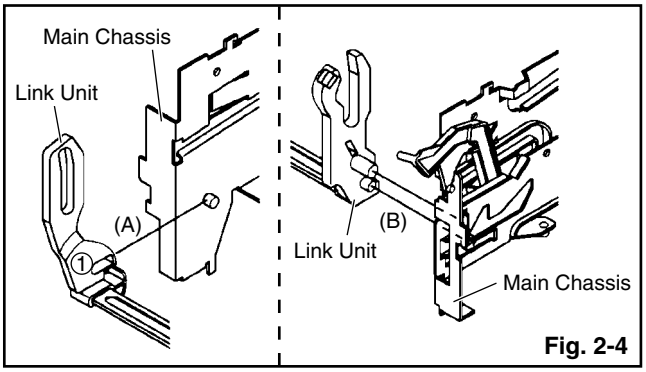


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

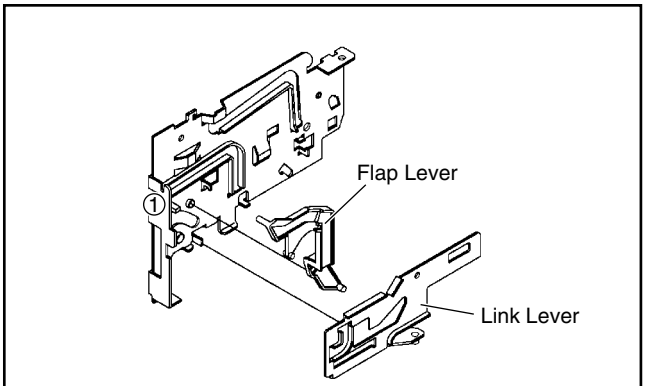


Fig. 2-5

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

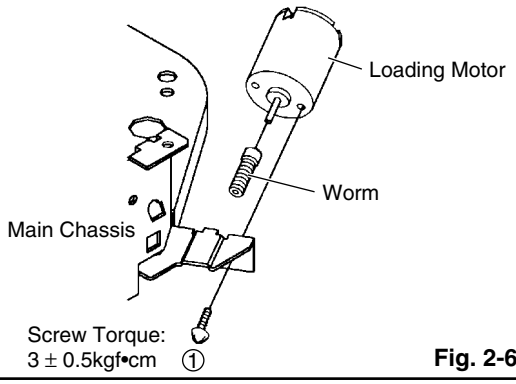


Fig. 2-6-A

NOTE:

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

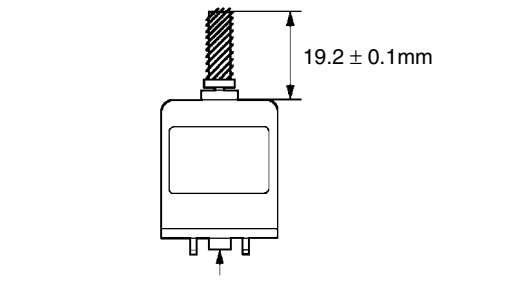


Fig. 2-6-B

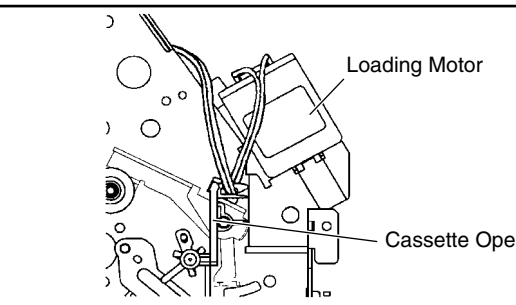


Fig. 2-6-C

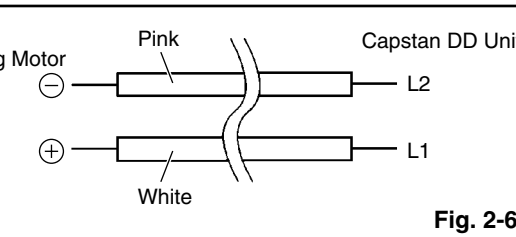


Fig. 2-6-D

2-7: TENSION ASSY (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Assy.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Assy.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

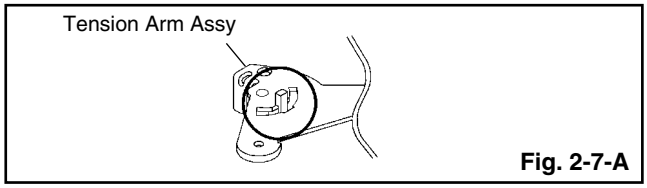


Fig. 2-7-A

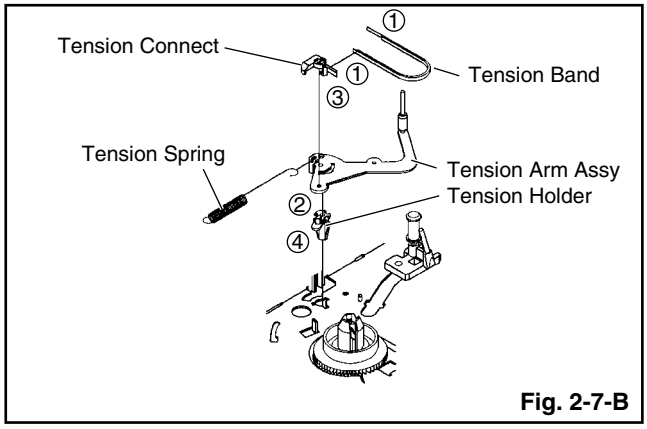


Fig. 2-7-B

NOTE:

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

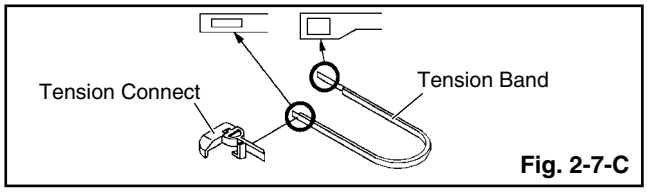


Fig. 2-7-C

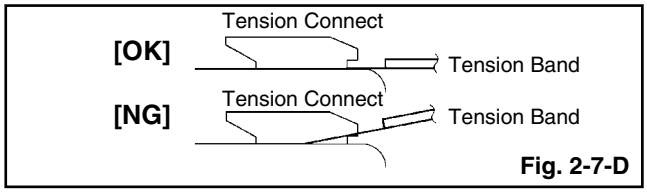


Fig. 2-7-D

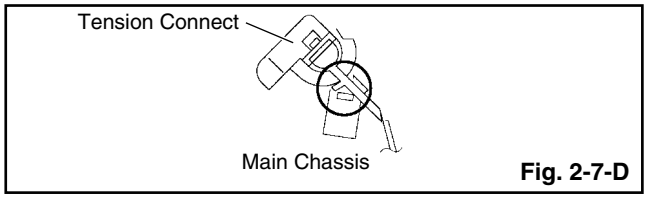


Fig. 2-7-D

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

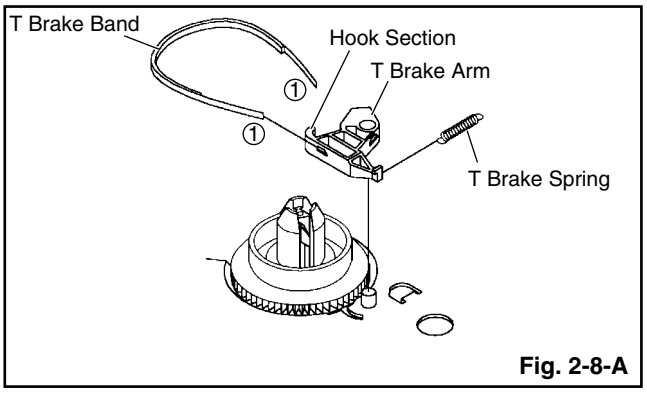


Fig. 2-8-A

NOTE:

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

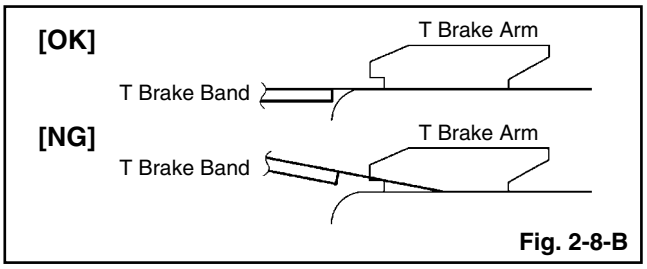


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE:

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it (FG-84M). (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

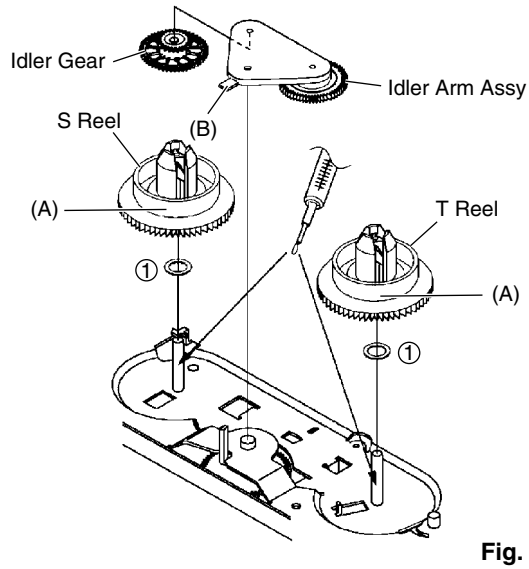


Fig. 2-9-A

NOTE:

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

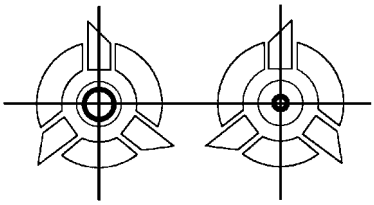


Fig. 2-9-B

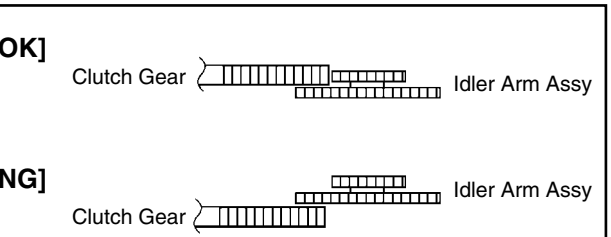


Fig. 2-9-C

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASSY (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Assy.

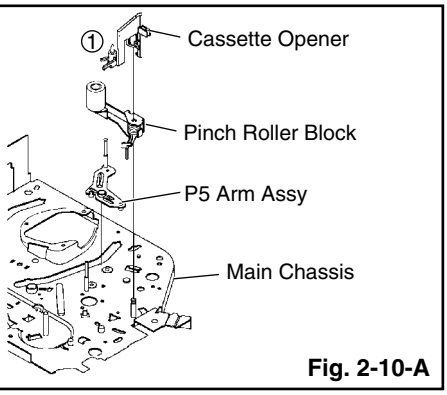


Fig. 2-10-A

NOTE:

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

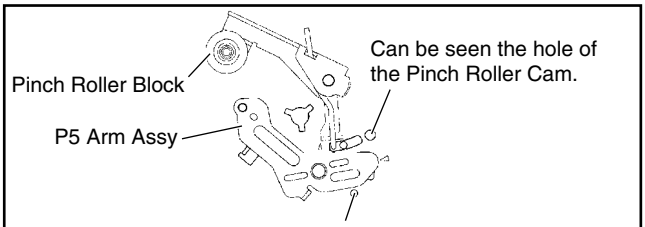


Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE:

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

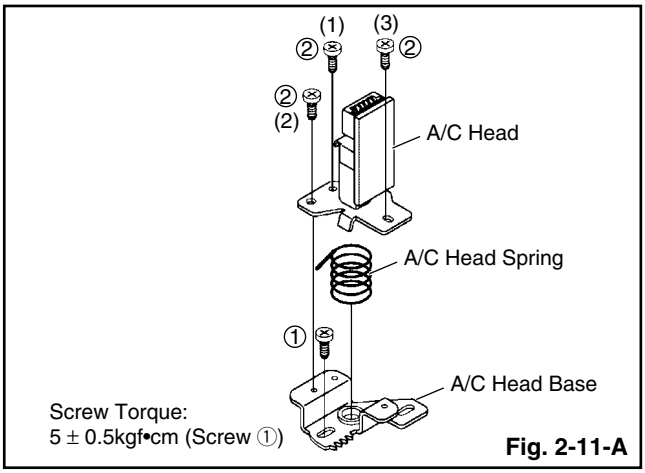


Fig. 2-11-A

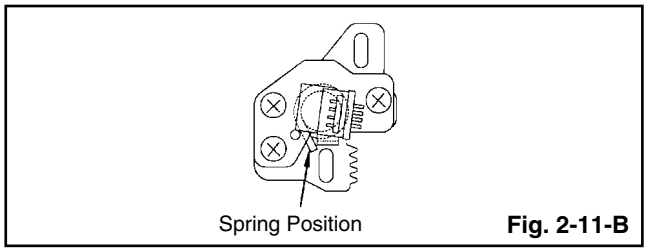


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.

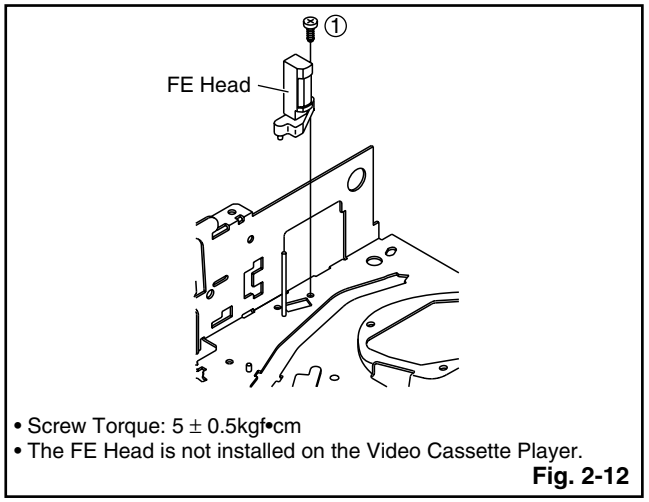


Fig. 2-12

2-13: AHC ASSY/CYLINDER UNIT ASSY (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Assy.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Assy.

NOTE:

1. When you install the Cylinder Unit Assy, tighten the screws from (1) to (3) in order while pulling the Assy toward the left front direction.

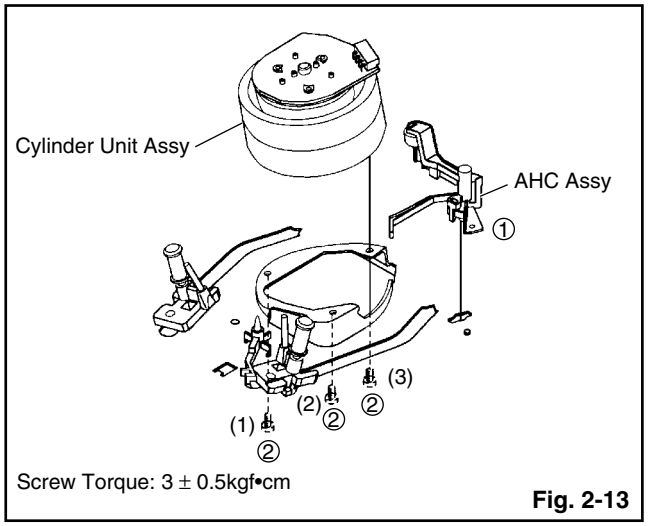
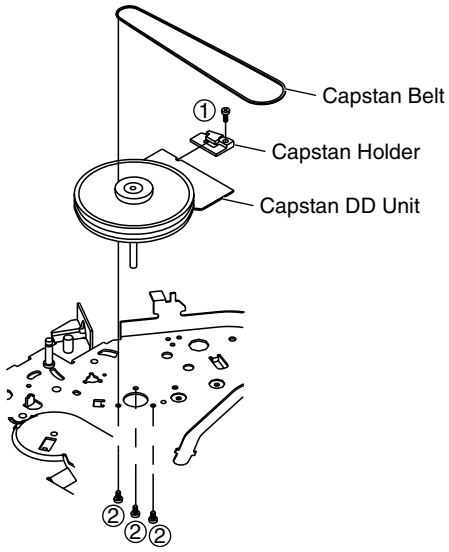


Fig. 2-13

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14)

1. Remove the Capstan Belt.
2. Remove the screw ①.
3. Remove the Capstan Holder.
4. Remove the 3 screws ②.
5. Remove the Capstan DD Unit.



Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-14

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

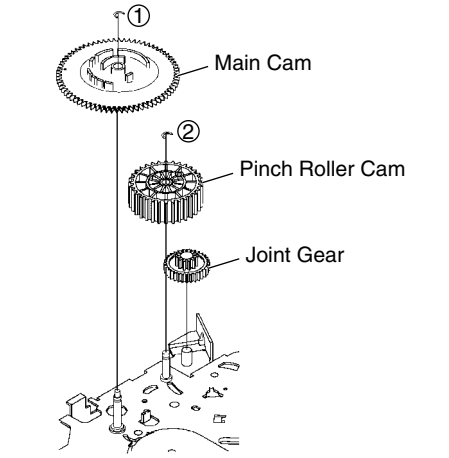


Fig. 2-15-A

NOTE:

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)**

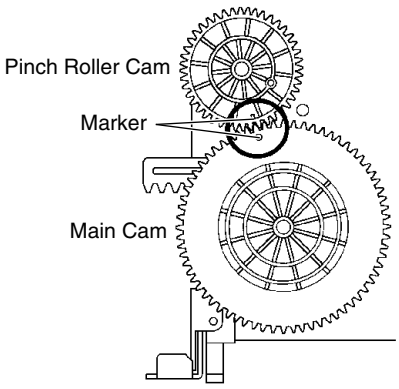


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

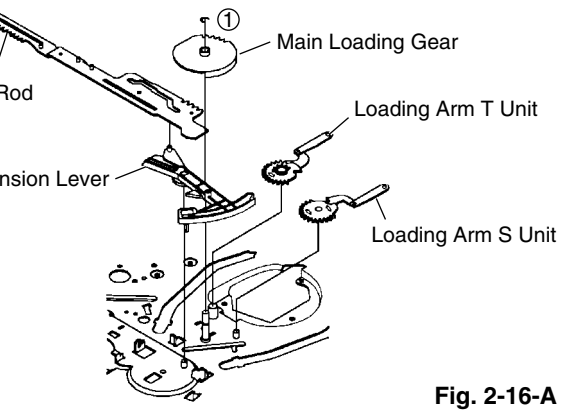


Fig. 2-16-A

NOTE:

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

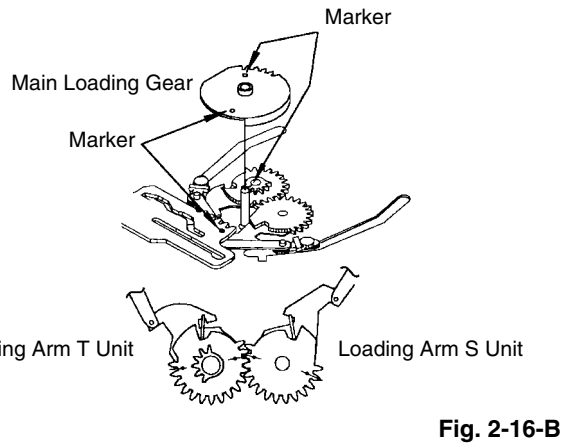


Fig. 2-16-B

2-17: CLUTCH ASSY/RING SPRING/CLUTCH LEVER/CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Assy and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

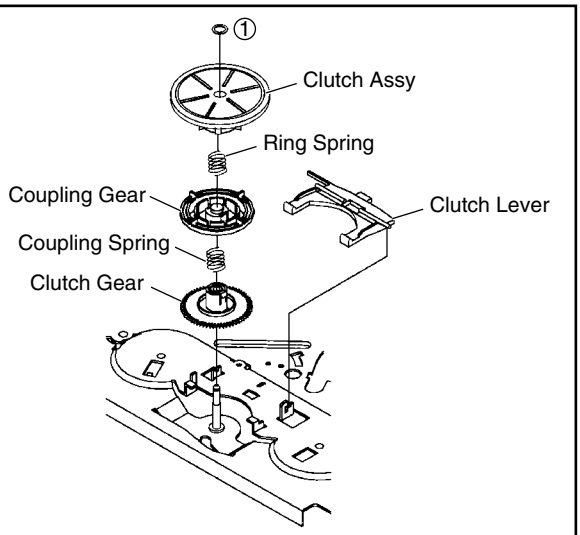


Fig. 2-17-A

NOTE:

1. In case of the Clutch Assy installation, install it with inserting the spring of the Clutch Assy into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

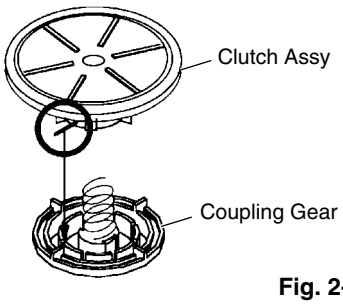
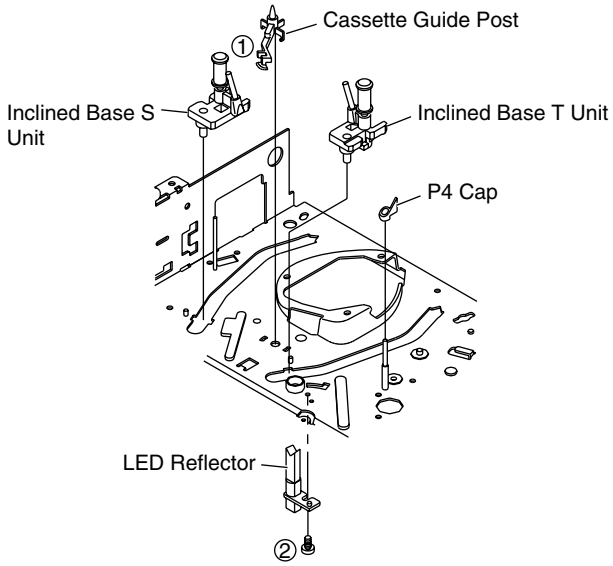


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP/LED REFLECTOR (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.



Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-18-A

NOTE:

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

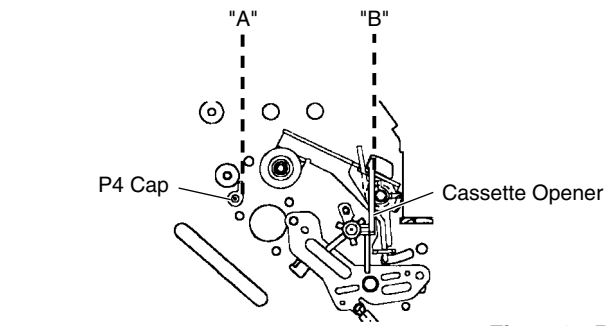


Fig. 2-18-B

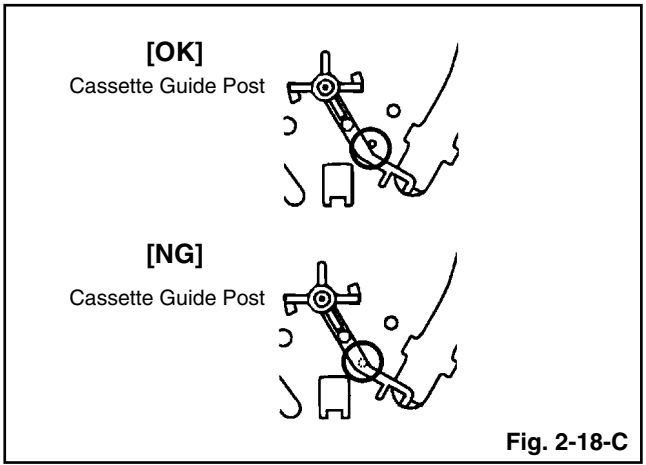


Fig. 2-18-C

7.9 CAUTIONS ON DIASSEMBLING AND ASSEMBLING

Screw List

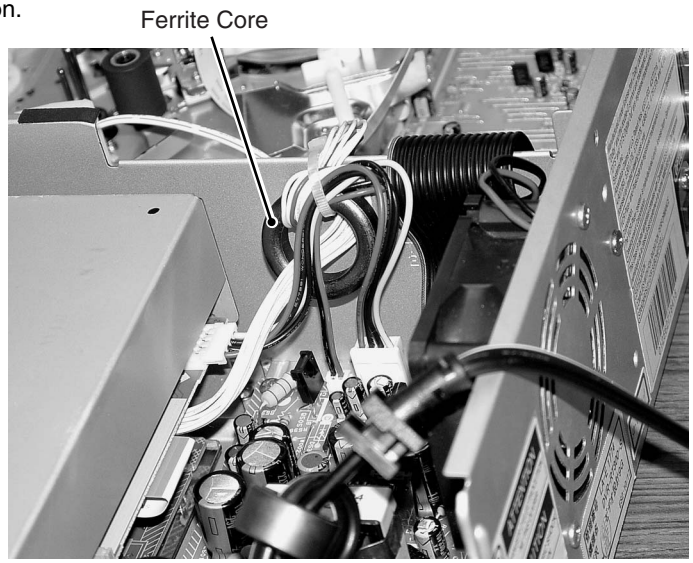
Parts Name	Num.	Used part	Parts Code
SCREW, TAP TITE(B) WH7 3*10 CH	1	HEAT SINK	8109I30A0U
SCREW, TAP TITE(P) WH10 M2.6*8 CH	1	SPRING of DVD FLAP	8110E2680U
SCREW, TAP TITE(P) BIND 2.6*8 CH	3	OPERATION PCB	8110022680U
SCREW, BIND 3*6 CH	4	ANGLE DVD + LOADER	810223060U
SCREW, TAP TITE(S) BIND 3*4 CH	1	TUNER	810723040U
SCREW, TAP TITE(B)R PAN 3*29 CH	3	VCR DECK	8109130B9U
SCREW, TAP TITE(B) R BIND 3*7 CH	13	VCR PCB 1 MPEG PCB 4 ANGLE DVD + BOTTOM 6 ANGLE DVD + SHIELD 2	810923070U
SCREW, TAP TITE(B) BIND 3*8 CH	12	POWER PCB 3 3PIN JACK 4 FAN 2 S-VIDEO 2 OPTICAL JACK 1	810923080U
SCREW, TAP TITE(B) BIND(3D) 3*6 NI	5	CABINET TOP	8109K30601

CORD CONNECTOR, CORD JUMPER List

Parts Name			Used part	REF NO.	Parts Code
CORD CONNECTOR	CU2A2701	L=270MM P=2.0MM 10PIN	VCR⇔MPEG 10 wires	CD7304	06CU2A2701
CORD CONNECTOR	CU2252802	L=285MM P=2.0MM 5PIN	VCR⇔OPERATION	CD651	06CU252802
CORD CONNECTOR	CU641202	4PIN L=120MM P=2.5MM	DVD DECK⇔POWER for DECK Power	CD504	06CU641202
CORD JUMPER	BH040061	L=60MM P=0.5MM H=8MM 40PIN	DVD DECK⇔MPEG	CD4001	12BH040061
CORD JUMPER	2F061501	6PIN FFC L=150MM	VCR⇔AC HEAD	CD102	122F061501
CORD JUMPER	2H0I1802	18PIN L=180MM P=1.0MM	MPEG⇔VCR	CD7303	122H0I1802
CORD JUMPER	2H0K1802	20PIN L=180MM P=1.0MM FFC	MPEG⇔VCR	CD7301	122H0K1802
CORD JUMPER	2H0K1802	20PIN L=180MM P=1.0MM FFC	MPEG⇔VCR	CD7302	122H0K1802

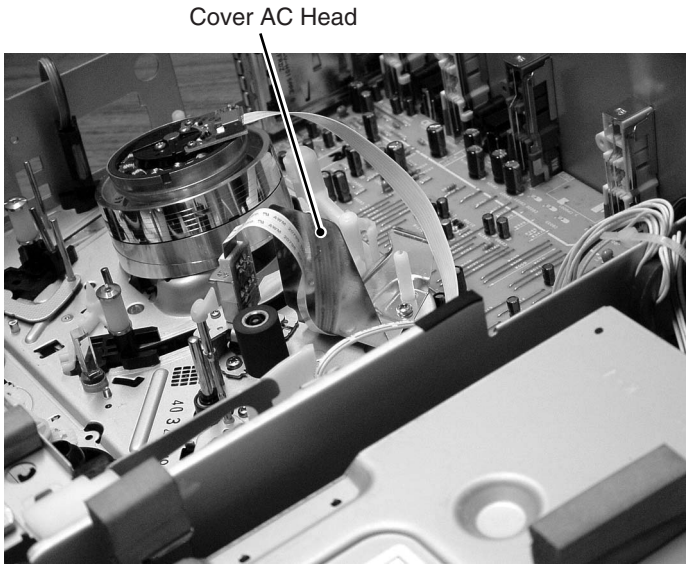
■CAUTION

1. When reattaching the Front Cabinet, attach the cabinet pressing the Flap of VCR side toward inside.
2. When reattaching the POWER PCB Assy to the Plate bottom, tighten the two screws for the round holes first then tighten the screws for the slotted holes.
3. When reattaching the Angle DVD to the DVD deck, tighten the screws for the round holes situated on the rear side first.
4. Insert each flexible cable straight, to avoid loose connection.
5. Be sure to pass the binder through the ferrite core that is attached to the CD7304 (10 wires that connect between MPEG and VCR) and secure and fix both the ferrite core and the CD7304 using the binder. If only the wires are secured but the ferrite core is not, the ferrite core may have movement and become damaged.
6. When attaching the ferrite core to the CD7304, pass the wires through it twice (one wind around it). Incorrect attachment of the ferrite core may compromise its effects of reducing spurious radiation.



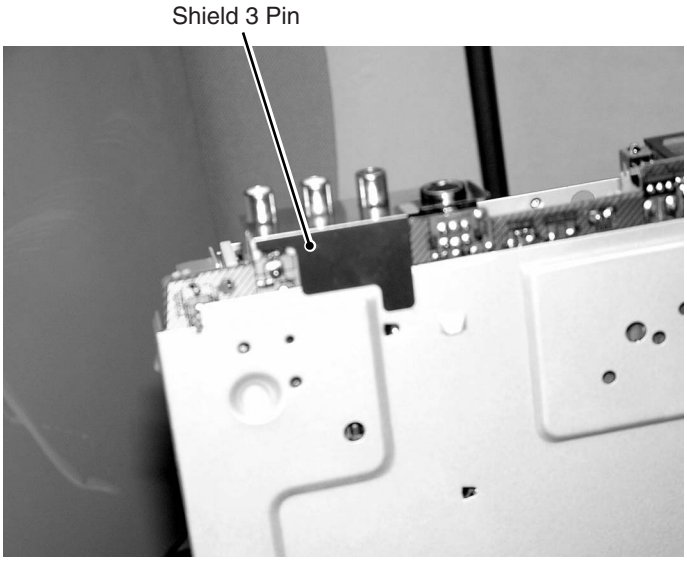
■CAUTION (Continued)

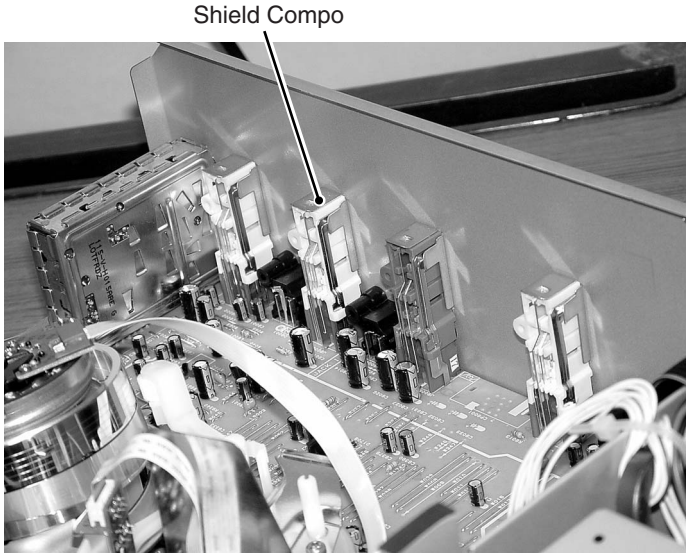
7. Be sure to reattach the Cover AC Head, which is for preventing noise from invading normal audio signals.



8. Be sure to reattach the Shield 3 Pin to the front jack and the Shield Compo to the rear jack of the VCR MT PCB Assy. Those are for preventing electrostatics.

9. Be sure to reattach the Shield 3 Pin so that part of it protrudes from the Plate bottom. Be careful that the Shield 3 Pin is not embedded between the Plate bottom and the circuit board.





7.10 KEY TO ABBREVIATIONS

A	A/C	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASSY	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	BGP	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	C	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	DATA (SY-CE)	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	E	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	F	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	GEN	:	Generator
	GND	:	Ground
H	H.P.F	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	IC	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	KIL	:	Killer
L	L	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
L	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	M	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	NC	:	Non Connection
	NR	:	Noise Reduction
O	OSC	:	Oscillator
	OPE	:	Operation
P	PB	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	R	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	S. CLK	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch
	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	TR	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	UNREG	:	Unregulated
V	V	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	X'TAL	:	Crystal
Y	Y/C	:	Luminance/Chrominance

7.11 DISC/CONTENT FORMAT

Discs which can be played back

In this unit, use only discs that meet the standard, such as those bearing the below logo marks on the disc label surface. If you use a non-standard disc, we cannot guarantee playback. Even if such a disc can be played back, we cannot guarantee the image or sound quality The DVD logo is a registered trademark.

Media type	Logo mark
DVD-Video	
DVD-RW Ver.1.0 Ver.1.1 Ver.1.2 Ver.1.1CPRM support Ver.1.2CPRM support	
DVD-R Ver.2.0 (Ver.2.0/4x/8x)	
Audio CD*	
CD-R/CD-RW	

* This unit is designed to playback music Compact Discs (CD) that conform to the CD standard. CDs that contain (copy-restriction) signals to protect copyrights cannot be played back.

Older models of DVD recorders and DVD writers may reject DVD-RW Ver.1.2 / 4x discs. If you want to share DVD-RW discs between this recorder and an older recorder/writer, we recommend using Ver.1.1 discs.

Region management information

This unit is designed and manufactured to support the region management information that is recorded on a DVD disc. If the region number written on the DVD disc does not correspond to the region number of this unit, this unit cannot play that disc.

- The region number of this unit is "1".
- The unit will play DVD-Video discs marked with labels containing "1" or "ALL".

Example:

Operating DVD-Video

- Some operations of DVD-Video may be prohibited by the manufacturer, or some operation methods or functions of the DVD-Video may be different from the description in this manual.
- If you attempt an operation that is prohibited by either the disc or the unit, a "✋" mark will appear on the TV monitor. For operations prohibited by the disc, see the information that came with the disc.
- When the menu screen or the operation guide appears during disc playback, follow the displayed information.

Discs which cannot be played back

The discs listed below cannot be played back in general. Even if one of these can be played back, it may not be played back correctly. If a disc is played back by mistake, extensively loud sounds may blow the speakers or may damage the hearing of those in hearing range. Do not playback the discs listed below

CDG, Photo-CD, CD-ROM, CD-TEXT,CD-EXTRA, VCD, SVCD, SACD, PD, CDV, DVD-ROM, DVD-RAM, DVD+R/RW, DVD audio, etc.

The below DVD-Video may not be played back.

- DVD-Video that do not have the region number"1" or "ALL".
- PAL or SECAM DVD-Video.
- Prohibited or business-use DVD-Video.

CD-R/CD-RWs cannot be played back for the following reasons.

- Compatibility of the disc and this unit.
- Compatibility of the disc and the recorder used.
- Unfinalized discs.

Do not playback the following discs. Playback of these discs may cause a failure.

- Discs on which paper, labels or stickers are affixed.
- Discs that have sticky areas left by adhesive tape.
- Special-shaped discs.

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs on which video can be recorded

To record video with this unit, use the discs below:

Media type	Logo mark
DVD-RW Ver.1.0 Ver.1.1 Ver.1.2 Ver.1.1CPRM support Ver.1.2CPRM support	
DVD-R Ver.2.0 (Ver.2.0 /4x /8x)	

DVD-RW

- The disc can be erased and used again about 1,000 times.
- Only the VR mode can be used for Ver.1.0 discs.
- With Ver.1.1/1.2 discs, you can record by selecting the VR mode or Video mode.
- When you record in the VR mode, you can repeatedly record and erase. By erasing unnecessary titles, you effectively increase remaining time.
- When you record in the Video mode, you can record until the disc becomes full.
- When you use the Video mode, you can newly record on the disc by formatting the disc. However, if the disc is formatted, all the recorded contents will be erased.

DVD-R

- You can record on the disc only in the Video mode.
- You can record until the disc becomes full.
- Finalizing the discs allows playback on other DVD players. However, the finalized discs can no longer be recorded.
- Discs can be recorded to repeatedly until they are finalized.

Note

- There are some players that cannot playback discs that were recorded with this unit. We cannot guarantee the playback with other units.
- This unit cannot record on DVD-R and DVD-RW discs that are 8 cm in diameter.
- This unit cannot record on CD-R or CD-RW.

Recording format

This unit has two modes for formatting discs for recording: VR mode and Video mode.
When a blank, new disc is loaded into this unit, the automatic format function starts to format the disc. (For the disc format setting in this step.)

VR mode

- This mode can be used for DVD-RW.
- In this mode, the discs can be recorded and edited repeatedly.
- The disc recorded in this mode can be played back with other DVD -RW-compatible players.
- When a Ver.1.1 CPRM or Ver.1.2 CPRM disc is used, you can record a “Copy Once ” program.

Video mode

- This mode can be used for DVD-R and DVD-RW (Ver.1.1/1.2).
- When you finalize the disc after recording, the disc recorded with this unit can be played back with other DVD players.
- Recording, editing or playback of an unfinalized disc can be done only with this unit. However, there is some limitation to editing operations.
- In this mode, you cannot record a“Copy Once” program.
- When you record a TV program of a bilingual broadcast, only one of the audio modes can be recorded. You have to select it.

Format modes that can be used each disc

The usable format depends on the media type as shown in the below table.

Media type	Format	Available functions
DVD-RW Ver.1.0	VR mode	Playback, recording and editing (Original/playlist)
DVD-RW Ver.1.1 and 1.2	VR mode	Playback, recording and editing (Original/playlist)
	Video mode	Playback and recording Editing (with limitation)
DVD-R Ver.2.0 (Ver.2.0/4x/8x)	Video mode	Playback and recording Editing (with limitation)

7.12 CLEANING

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

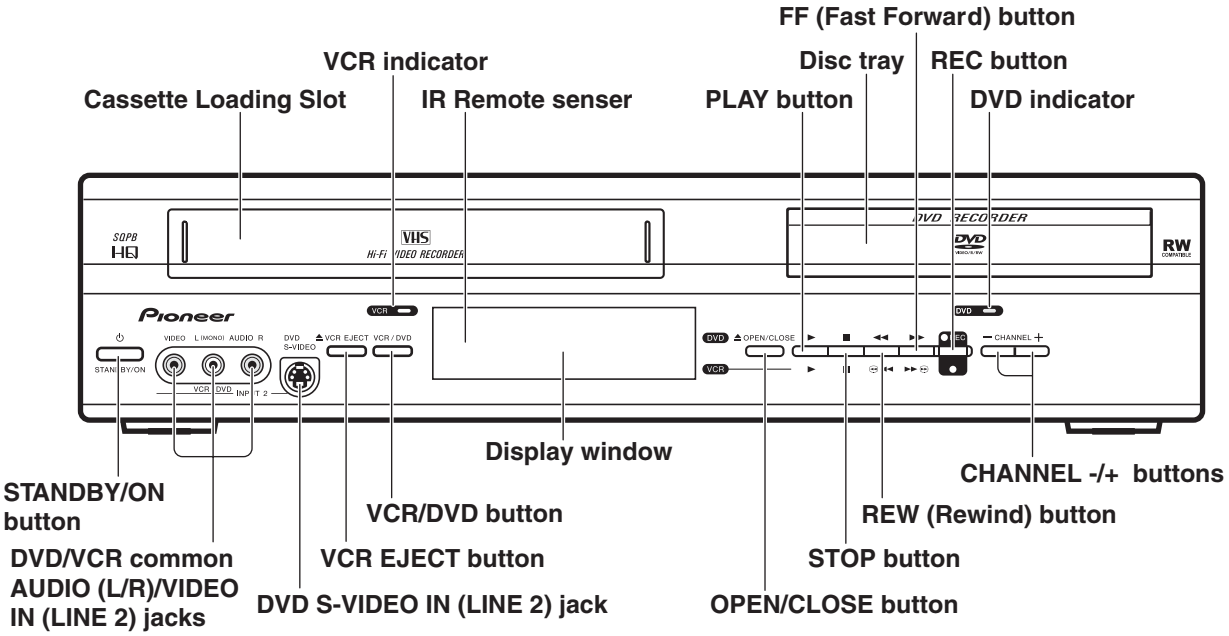
Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

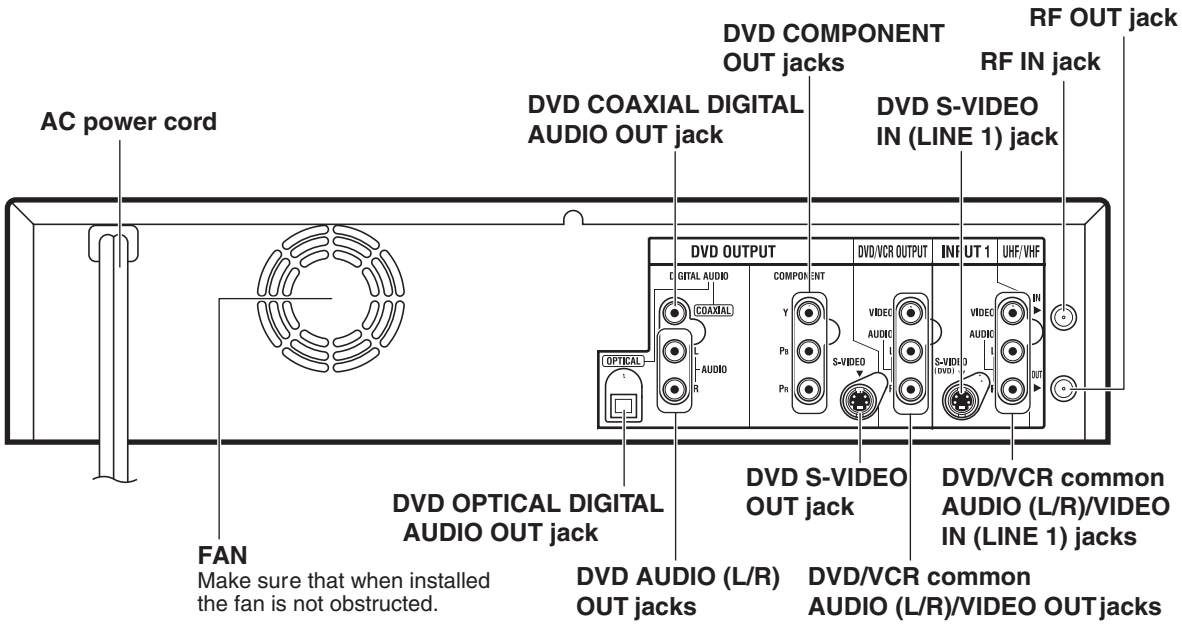
8. PANEL FACILITIES

8.1 FRONT AND REAR SECTION

Front panel

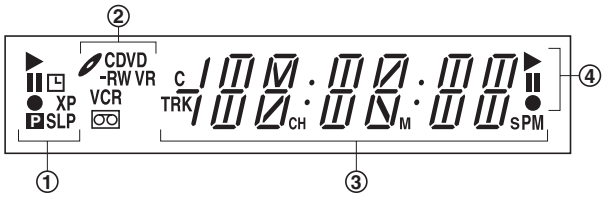


Rear panel



8.2 DISPLAY

Display window



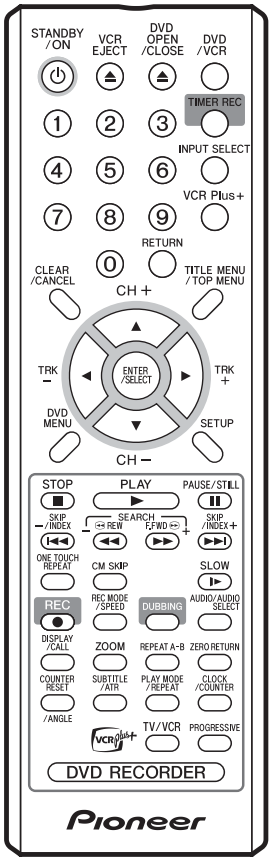
No.	Display	Description
①	▶	Lights during video tape playback.
	⏸	Video tape is temporarily stopped.
	●	Lights during video tape recording.
	P	Progressive scanning mode.
	◳	Timer recording display.
	XP/SP/LP/SLP	4 DVD recording modes. XP, SP, LP or SLP is selected in turn by pressing the REC MODE/SPEED repeatedly.
	SP/SLP	2 VCR recording modes. SP or SLP is selected in turn by pressing the REC MODE/SPEED repeatedly.
②	**CD**	Appears when a CD is inserted.
	CD-R	Appears when a CD-R is inserted.
	CD-RW	Appears when a CD-RW is inserted.
	DVD	Appears when a DVD-Video is inserted.
	DVD-R	Appears when a DVD-R is inserted.
	DVD-RW	Appears when a DVD-RW is inserted.
	VR	Appears when a DVD-RW in VR mode is inserted. When the disc is set to video mode, VR does not appear.
	VCR	Appears when the tuner built into this unit is selected. When you press TV/VCR, VCR disappears.
	📼	Video tape is in the unit.
③	**10:00**	Clock display (Colon [:] flashes).
	01H00M00S	Counter display in hour/minute/second for VCR/DVD, minute/second for CD.
	C 36CH	CATV channel display.
	2CH	TV channel display.
	TRK 002	Track number display for CD.
	PM	Display for afternoon (out in the morning).
	L1/L2	The external input channel (L1 or L2) display
	Err	Error display.
④	▶	Lights during playback of DVD and CD. Flashes in auto resume.
	⏸	DVD or CD is temporarily stopped.
	●	Lights during DVD recording.

Note

- Some discs may not playback correctly or chapter number, playback time, etc may not be displayed.

8.3 REMOTE CONTROL

Remote control



1 STANDBY/ON
Turns power on/off

2 VCR EJECT
Ejects the cassette tapes.

3 DVD OPEN/CLOSE
Opens or closes the tray.

4 DVD/VCR
Switches to operation between VCR and DVD.

5 0-9
Use for direct TV channel selection of TV; setting the input entering a password ; entering a Pluscode for VCR Plus+ timer programming.

6 TIMER REC
Sets the unit to start recording at a preset time.

7 INPUT SELECT
Switches between the external inputs.

8 VCR Plus+
Display the VCR Plus+ program screen.

9 RETURN
Closes the menu window.

10 CLEAR/CANCEL
Cancels input data in the setting mode ; deletes the timer recording program .

11 TITLE MENU/TOP MENU

Selects titles of a DVD disc.

12 CH +/–
Use to select TV channels.
▲/▼
Up/down cursor buttons

13 TRK +/–
Use to adjust the VCR manual playback tracking.
◄/►
Left/right cursor buttons

14 ENTER/SELECT
Use to select menu options.

15 DVD MENU
Displays the menu of the DVD disc.

16 SETUP
Displays the setup menu.

17 STOP
Stops playback or recording.

18 PLAY
Starts playback.

19 PAUSE/STILL
Pauses recording or playback (press again to restart).

20 SKIP⊣◄◄ / ►►⊢
Skips forward or back chapters.

21 INDEX –⊣◄◄ / +►►⊢
Searches for INDEX marks on a tape

22 REW/SEARCH –
Rewind/review playback

23 F.FWD/SEARCH +
Fast forward/forward search playback

24 ONE TOUCH REPEAT
Repeats playback of the last 10 seconds of video.

25 CM SKIP
Skips commercial breaks.

26 SLOW
Starts slow motion playback.

27 REC
Starts recording.

28 REC MODE/SPEED
Selects the recording mode.

29 DUBBING
Copies VCR to DVD or DVD to VCR.

30 AUDIO/AUDIO SELECT
Switches sound between mono and stereo ; changes the language of the DVD.

31 DISPLAY/CALL
Displays VCR or DVD operation status.

32 ZOOM

33 REPEAT A-B
Repeats playback between A and B.

34 ZERO RETURN
Stops the tape when the counter reaches $00_H00_M00_S$.

35 COUNTER RESET
Resets the counter to $00_H00_M00_S$.

36 ANGLE
Changes the DVD playback angle.

37 SUBTITLE
Selects subtitles of the DVD disc.

38 ATR
Digital auto tracking for VCR playback.

39 PLAY MODE
Selects the playback mode.

40 REPEAT
Selects the repeat playback mode.

41 CLOCK/COUNTER
Changes the front panel display mode.

42 TV/VCR
Switches input between the TV and VCR.

43 PROGRESSIVE
Activates the progressive scanning mode.

A

B

C

D

E

F

■ Jigs list

Name	Jig No.	Remarks
VHS Alignment Tape	GGV1183	Hi-Fi Audio (For 4 heads mode)
VHS Alignment Tape	GGV1184	X Value Adjustment (For 4 heads mode)
VHS Alignment Tape	GGV1185	EP Monoscope, 6kHz (For 4 heads mode)
Adapter	GGF1506	VSR Torque, Brake Torque (S Reel/T Reel Assy)
Dial Torque Gauge (10-90 gf•cm)	GGF1507	Brake Torque (T Reel Assy)
Dial Torque Gauge (60-600 gf•cm)	GGF1508	VSR Torque, Brake Torque (S Reel)
Post Adjustment Screwdriver	GGF1509	Guide Roller Adjustment
X Value Adjustment Screwdriver	GGF1510	X Value Adjustment
Mater Plane	GGF1511	Reel Disk Height Adjustment
Reel Disk Height Adjustment Jig	GGF1512	Reel Disk Height Adjustment
Torque Tape (VHT-063)	GGV1186	Playback Torque, Back Tension Torque During Palyback